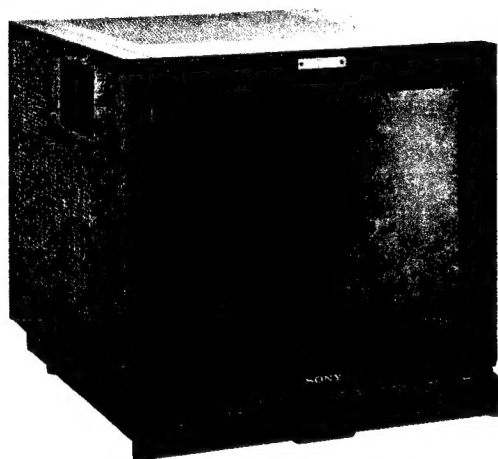


**SONY**

TRINITRON® COLOR VIDEO MONITOR

# **BVM-1911** **BVM-2011P**



*BVM-1911*  
*Chassis No. SCC-A97C-A*  
*BVM-2011P*  
*Chassis No. SCC-B26C-A*



## **OPERATION AND MAINTENANCE MANUAL**

1st Edition

Serial No. 2000001 and Higher (BVM-1911)

Serial No. 2000001 and Higher (BVM-2011P)

## **WARNING**

### **For the customers in the USA**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

### **For the customers in Canada**

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

### **SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY SHADING AND MARK  $\Delta$  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.**

**VORSICHT!!**

Hinweis für den Benutzer  
Das Gerät ist nicht für den Einsatz in Bildschirmarbeitsplätzen vorgesehen.

**CAUTION!!**

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.  
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

### **Bescheinigung des Herstellers/Importeurs**

Hiermit wird bescheinigt, daß der Farb-Videomonitor BVM-2011P in Übereinstimmung mit den Bestimmungen der BMPT-Amtsblatt Vfg 243/1991, 46/1992 funkentstört ist. Der vorschriftsmäßige Betrieb mancher Geräte (z.B. Meßsender) kann allerdings gewissen Einschränkungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung. Dem Bundesamt für Zulassungen in der Telekommunikation wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Sony Deutschland GmbH  
Hugo Eckener Str 20  
50829 Köln

### **ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!**

**LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  $\Delta$  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.**

**ATTENTION!!**

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRIEUR POUR DÉMAGNÉTISER L'ÉCRAN.  
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.**

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# Section 1 Operation

## 1-1. Overview

### 1-1-1. Features

---

The BVM-1911 and BVM-2011P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.

The BVM-1911 is the NTSC model intended for use in NTSC color standard areas and the BVM-2011P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.

The other features and operations are the same.

#### **High-resolution picture**

The Super Fine Pitch Trinitron picture tube (0.3-mm aperture grille pitch) gives a high resolution, high contrast picture. Horizontal resolution is more than 900 TV lines at the center of the picture.

#### **Stabilized color temperature**

The incorporated beam control circuit maintains the color temperature constant for a long period of time.

#### **Picture aspect selection**

In addition to the conventional 4:3 aspect, the 16:9 aspect can be selected for monitoring the increasing number of wide-screen programs.

#### **Split screen for precise picture confirmation**

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

#### **Blue-only mode for precise evaluation of noise components**

In blue-only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

#### **Easy and precise convergence adjustment**

The convergence can be adjusted at 15 points (for 4:3-aspect pictures) of the screen. This system facilitates adjustment of the peripheral areas of the screen.

## Section 1 Operation

### Easy-to-use menu operations

The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.

### Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-2056 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- A drawer containing convergence, white balance and menu controls and other function selectors
- High-performance comb filter available for the BVM-1911 as built-in standard. (For the BVM-2011P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting, using the optional BKM-2000 rack mount kit

## 1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the BVM-1911/2011P.

### Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

**BKM-1410 NTSC adaptor (BC board)** [built-in standard for the BVM-1911]

Decoder board for the NTSC color system

**BKM-1411 NTSC comb adaptor (BB board)**

Comb filter board for the NTSC color system

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**BKM-1412 NTSC comb adaptor (BT board)** [built-in standard for the BVM-1911]

Dynamic comb filter board for the NTSC color system

**BKM-1420 PAL adaptor (BD board)** [built-in standard for the BVM-2011P]

Decoder board for the PAL color system

**BKM-1421 PAL-M adaptor (BM board)**

Decoder board for the PAL-M color system

**BKM-1422 PAL comb adaptor (BT board)**

Comb filter board for the PAL color system

**BKM-1430 SECAM adaptor (BE board)**

Decoder board for the SECAM color system

**BKM-1440 RGB/component adaptor (BF board)**

Decoder outputs of RGB or component signals

**BKM-1460 VITC adaptor (BL board)**

Reader of Vertical Interval Time Code

**BKM-1470 safe area display (BQ board)**

For displaying the safe area

**BKM-1480 black level signal generator (BS board)**

For generating black level signals

**BKM-2000 rack mount kit**

For mounting in an EIA standard 19-inch rack

**BKM-2053 auto set-up probe**

For auto set-up operation with the BKM-2056 auto set-up adaptor

**BKM-2056 auto set-up adaptor (BN, BO and BP boards)**

For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

**BKM-2085-20 digital 4:2:2 serial input kit (BA3 and BV boards)**

For two serial inputs of component digital video signals

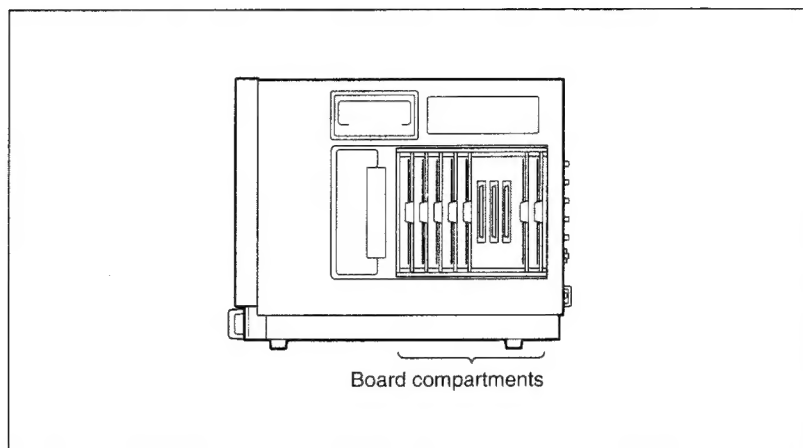
**BKM-2090-20 D-2 serial input kit (BA3 and BU boards)**

For serial input of a digital composite video signal

## Section 1 Operation

### Combination of the optional boards

The BVM-1911/2011P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-1911 comes from the factory with the BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B4 and B5.

The BVM-2011P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.

Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page.

Add the desired boards or replace the supplied BT, BC or BD board with optional boards, referring to the table on the next page.

#### Notes

- The compartments other than B1 through B5 are reserved for the supplied BA, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

# Board assignment

Board name	Function	Compartment name				
		B5	B4	B3	B2	B1
BB (BKM-1411)	NTSC comb filter	X	○	○	○	○
BT (BKM-1412)	NTSC comb filter	○	○	○	○	○
BT (BKM-1422)	PAL comb filter	○	○	○	○	○
BC (BKM-1410)	NTSC decoder	○	○	○	○	○
BD (BKM-1420)	PAL decoder	○	○	○	○	○
BE (BKM-1430)	SECAM decoder	○	○	○	○	○
BM (BKM-1421)	PAL-M decoder	○	○	○	○	○
BF (BKM-1440)	RGB/component adaptor	X	X	○	X	X
BL (BKM-1460)	VITC reader	X	X	X	○	X
BQ (BKM-1470)	Safe area display	X	△	X	○	X
BS (BKM-1480)	Black level signal generator	○	○	○	○	○
BN, BO, BP (BKM-2056)	Auto set-up adaptor	○	○	X	X	X
BV, BA3 (BKM-2085-20)	Digital 4:2:2 serial interface	X	X	X	X	○
BU, BA3 (BKM-2090-20)	D-2 serial interface	X	X	X	X	○

○ : acceptable

× : not acceptable

△ : acceptable but the switch or control settings on the subcontrol panels cannot control the display.

## Notes

- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- Do not use the BB (NTSC comb filter) and the BT (NTSC comb filter) boards simultaneously. This causes malfunctions of the monitor.

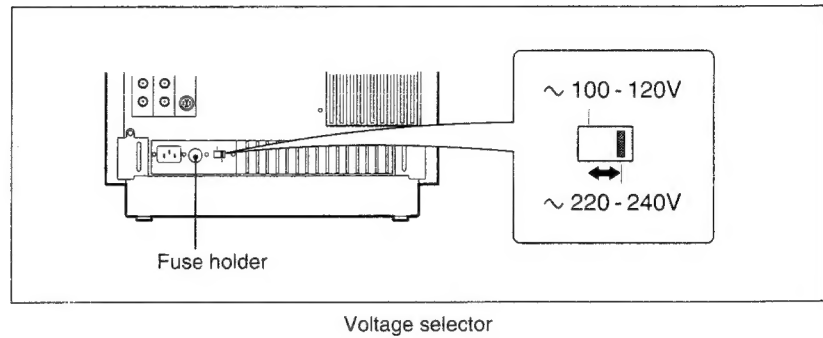
*For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.*

## Section 1 Operation

### 1-2. Voltage Selection

The BVM-1911 operates on 100-120 V AC and the BVM-2011P operates on 220-240 V AC.

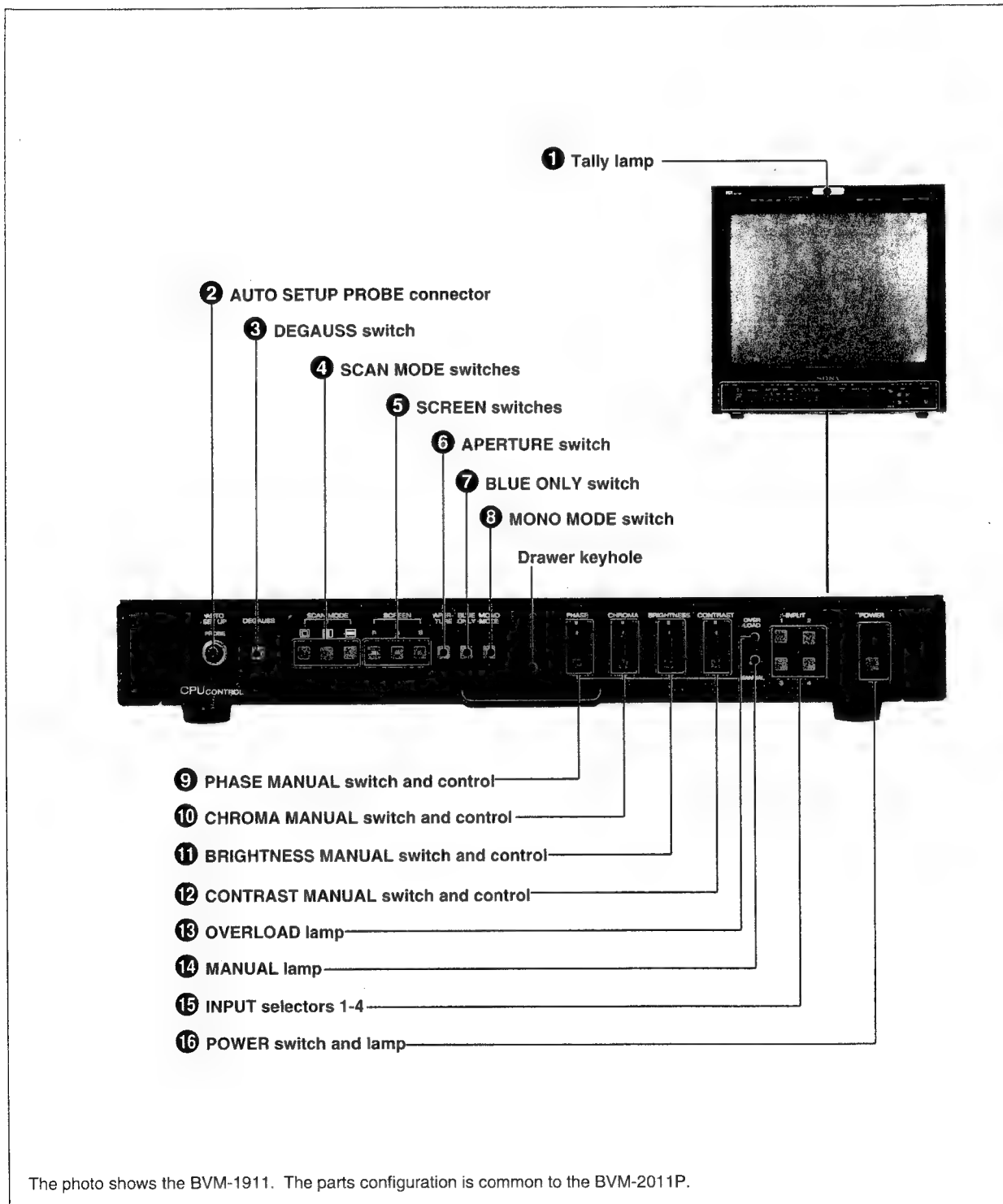
Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.

**Note**

Use a 4A/125 V fuse for the BVM-1911 (100-120 VAC) and a T2A/250V fuse for the BVM-2011P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

## 1-3. Location and Function of Parts

### 1-3-1. Front Panel

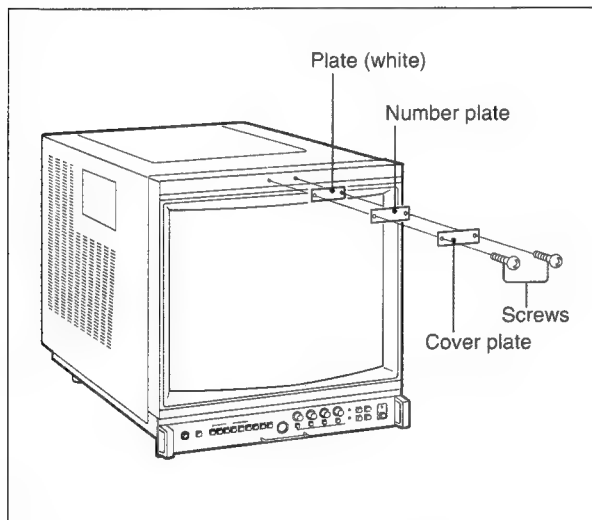


Front panel

## Section 1 Operation

### ① Tally lamp

Lights when pin No. 3 and No. 8 of the REMOTE connector on the rear panel are short-circuited. The model number plate has been attached here at the factory. Replace it with one of the supplied tally number plates, as illustrated below.



### ② AUTO SETUP PROBE connector

Connect the optional BKM-2053 auto set-up probe for auto setup operations.


### ③ DEGAUSS switch


When the power is turned on, automatic degaussing is activated.


To demagnetize the screen manually, press this switch momentarily with the power on.

When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

### ④ SCAN MODE switches

 (**underscan**): Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

 (**horizontal delay**): Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

 (**vertical delay**): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the  and  switches.

- To resume normal scanning, press to release the depressed switches.

### ⑤ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

### ⑥ APERTURE switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APERTURE control inside the drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the internal BG board.

With the S1 switch set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

With the S1 switch set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

### ⑦ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.



### **8 MONO MODE switch**

Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.  
Depress the switch to display color pictures in monochrome (MONO mode).

### **9 PHASE MANUAL switch and control**

When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.

To adjust the subcarrier phase manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

#### **Note**

The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

### **10 CHROMA MANUAL switch and control**

When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.

To adjust the color saturation manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

### **11 BRIGHTNESS MANUAL switch and control**

When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.

To adjust the brightness manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

### **12 CONTRAST MANUAL switch and control**

When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.

To adjust the contrast manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

### **13 OVERLOAD lamp**

Lights to warn of overloading of the CRT.

### **14 MANUAL lamp**

Lights when any of the four MANUAL switches 9 through 12 is depressed.

### **15 INPUT selectors 1 - 4**

Select the input signal to be monitored by pressing one of these buttons.

The requirements of the input signals can be set with the CONFIGURATION buttons in the drawer and can be assigned independently to the selectors and stored in memory through the INPUT CONFIG menu operation.

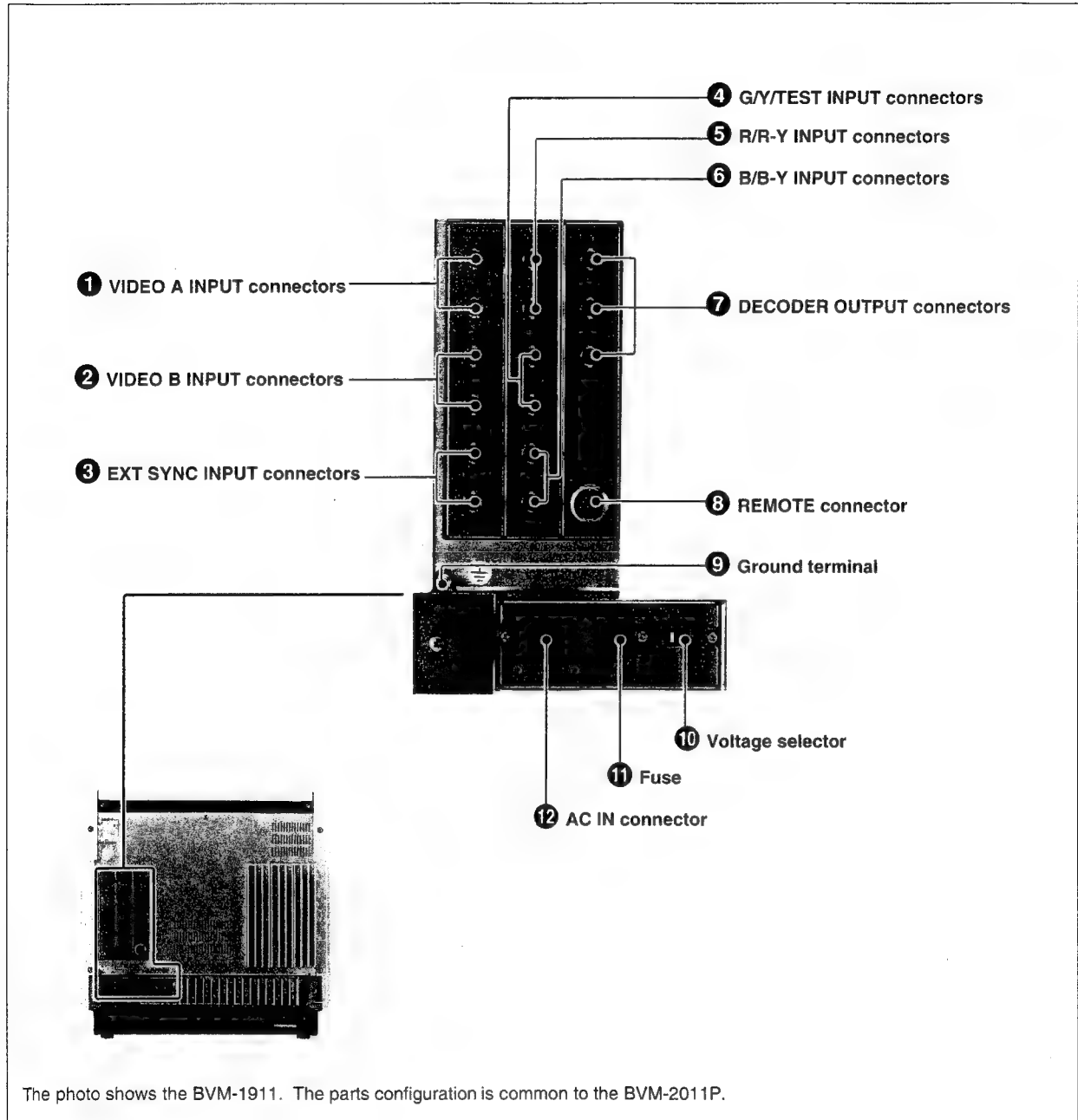
See "1-4-2. Setting the Input Configuration."

### **16 POWER switch and lamp**

Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

## Section 1 Operation

### 1-3-2. Rear Panel



Rear panel

#### 1 VIDEO A INPUT connectors (BNC)

#### 2 VIDEO B INPUT connectors (BNC)

Input composite video signals.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

#### 3 EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

**4 G/Y/TEST INPUT connectors (BNC)**

**5 R/R-Y INPUT connectors (BNC)**

**6 B/B-Y INPUT connectors (BNC)**

Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the drawer. Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

**7 DECODER OUTPUT connectors (BNC)**

Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

To provide RGB output, set the S1 selector to the upper position.

To provide component output, set it to the lower position.

**Notes**

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX switch.
- The color killer circuit is not activated for output signals.

**8 REMOTE connector**

Connect to an external control device using the supplied 10-pin connector.

To enter remote control mode, press the LOCAL/REMOTE button in the drawer so that the associated lamp lights.

The input mode and the pin assignment can be set through the REMOTE menu operation.

See "1-4-6. Assigning the Remote Control Functions."

**9 Ground terminal**

Connect to the system ground, when required.

**10 Voltage selector**

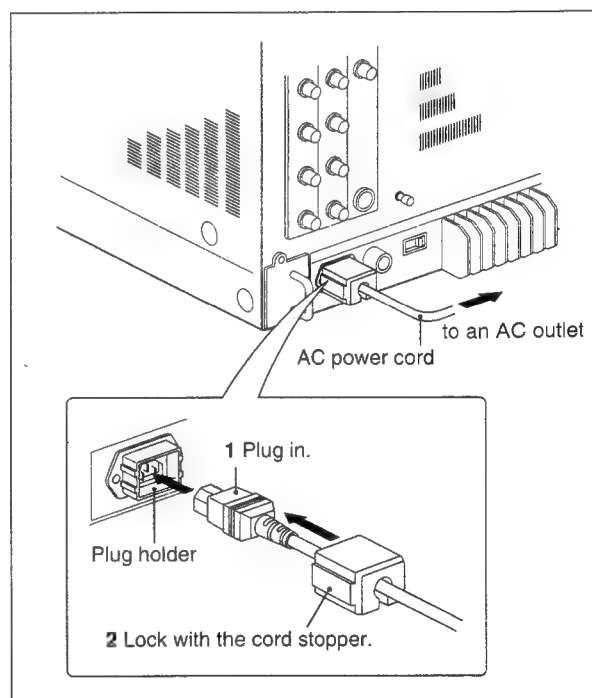
Set to 100-120 V AC for the BVM-1911 or 220-240 V AC for the BVM-2011P.

**11 Fuse**

Use a 4A fuse for the BVM-1911 or a T2A fuse for the BVM-2011P.

**12 AC IN connector**

Connect the supplied AC power cord here and secure it with the supplied cord stopper.



**NOTICE**

THIS NOTICE IS APPLICABLE FOR THE USA ONLY.

If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

DO NOT USE ANY OTHER POWER CORD.

Plug cap Tandem blade with ground pin  
Cord Type SJT, three 16 or 18 AWG  
Wires

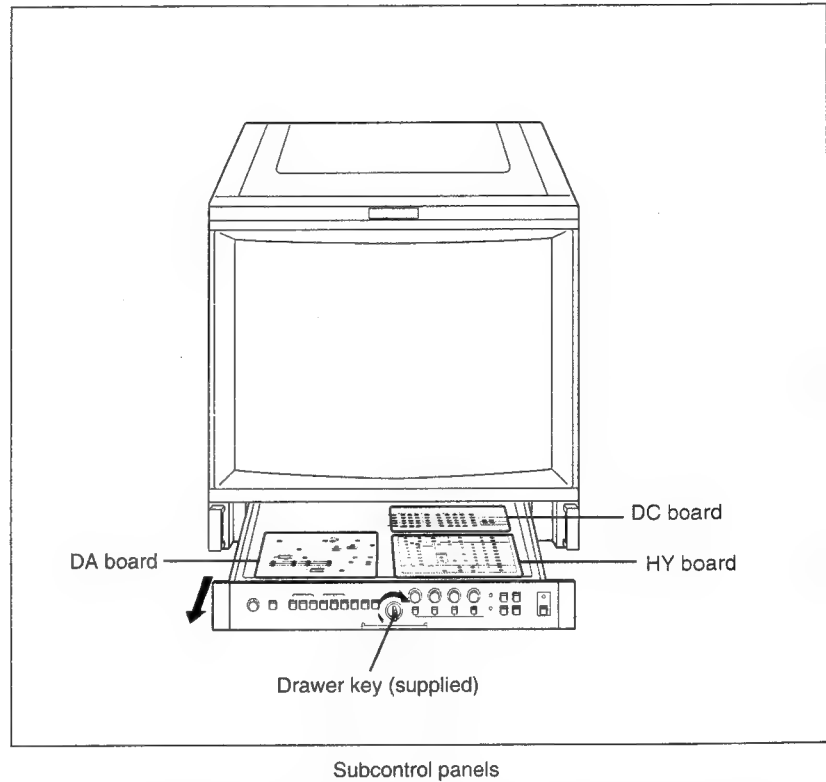
Length Maximum 15 feet  
Rating Minimum 10 A, 250 V AC

## Section 1 Operation

### 1-3-3. Subcontrol Panels inside the Drawer

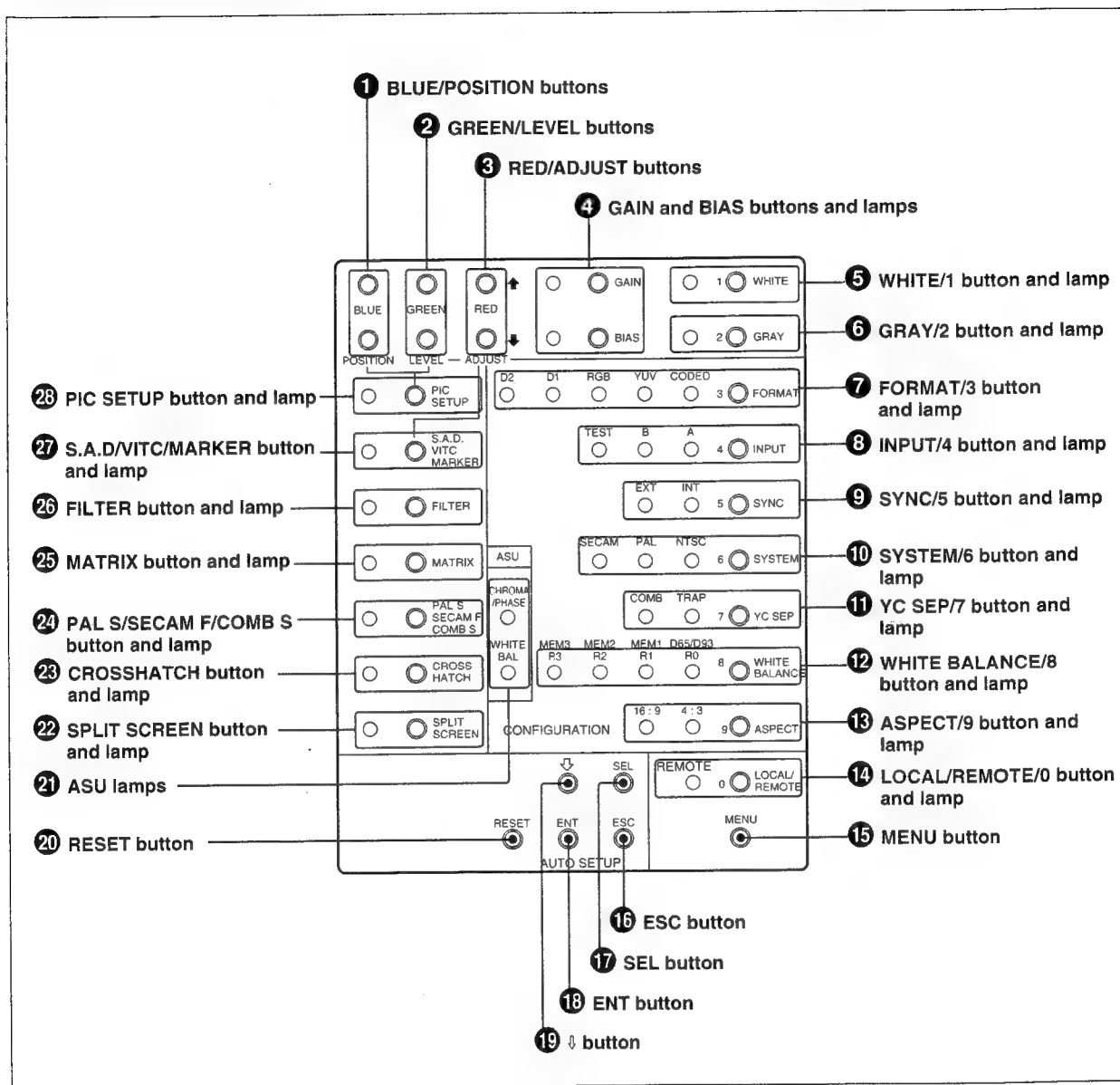
Insert the supplied drawer key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.

Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



For turning the controls on the DA and DC boards, use the supplied screwdriver.

## HY board (input configuration, menu and auto setup operation section)



HY board

### 1 BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

### 2 GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

## Section 1 Operation

### ③ RED/ADJUST buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these button to adjust the red signal.

When the safe area is displayed (the S.A.D/VITC/MARKER lamp is lit), use them to adjust the safe area size.

### ④ GAIN and BIAS buttons and lamps

When adjusting the white balance, select the adjustment items.

**BIAS:** Adjust the white balance at the lowlight and brightness of the screen.

**GAIN:** Adjust the white balance at the highlight and contrast of the screen.

For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

### ⑤ WHITE/1 button<sup>1)</sup> and lamp

When adjusting the white balance at the highlight, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

### ⑥ GRAY/2 button<sup>1)</sup> and lamp

When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

### ⑦ FORMAT/3 button<sup>1)</sup> and lamps

Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.

**CODED:** For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.

**YUV:** For monitoring Y/R-Y/B-Y component signals.

**RGB:** For monitoring RGB signals.

**D-1:** For monitoring D-1 format component signals.

**D-2:** For monitoring a D-2 format composite signal.

### ⑧ INPUT/4 button<sup>1)</sup> and lamps

When monitoring a composite signal, select the input connector.

Press this button so that the lamp of the appropriate connector lights.

**A:** For monitoring the signal connected to the VIDEO A INPUT connector.

**B:** For monitoring the signal connected to the VIDEO B INPUT connector.

**TEST:** For monitoring the test signal connected to the G/Y/TEST connector.

### ⑨ SYNC/5 button<sup>1)</sup> and lamp

Select the sync mode. Press this button so that the lamp of the appropriate mode lights.

**INT (internal sync mode):** The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.

**EXT (external sync mode):** The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

### ⑩ SYSTEM/6 button<sup>1)</sup> and lamps

When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.

**NTSC:** For monitoring a signal of the NTSC color system.

**PAL:** For monitoring a signal of the PAL color system.

**SECAM:** For monitoring a signal of the SECAM color system.

#### Note

If the decoder board for the selected color system has not been installed:

- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

**11 YC SEP(Y/C separation filter)/7 button<sup>1)</sup> and lamps**

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

**COMB:** To use the comb filter with the comb filter board (BB or BT) installed.

**TRAP:** To use the built-in trap filter.

**Note**

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

**12 WHITE BALANCE/8 button<sup>1)</sup> and lamps**

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights.

At the factory, the white balance for D6500 has been stored in all the registers.

**D65/D93 R0:** To use the white balance and picture levels stored in register 0.

**MEM 1 R1:** To use the white balance and picture levels stored in register 1.

**MEM 2 R2:** To use the white balance and picture levels stored in register 2.

**MEM 3 R3:** To use the white balance and picture levels stored in register 3.

*For details, see "1-4. Menu Operations."*

**13 ASPECT/9 button<sup>1)</sup> and lamps**

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

**4:3:** For the 4:3 aspect

**16:9:** For the 16:9 aspect.

**14 LOCAL/REMOTE/0 button<sup>1)</sup> and lamp**

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

*For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."*

**15 MENU button**

Press to initiate menu operations. The initial menu is displayed.

**16 ESC (escape) button**

Press to quit menu or auto setup operations.

**17 SEL (select) button**

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

*For details, refer to the operation and maintenance manual of the BKM-2056 auto set-up adaptor.*

**18 ENT (enter) button**

Press to proceed to the next step during menu or auto setup operation and save the data.

**19 ↓ (cursor) button**

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

**20 RESET button**

Press to reset an auto setup operation.

**21 ASU (automatic setup) lamps**

**CHROMA/PHASE:** Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu is selected in auto setup operations.

**WHITE BAL:** Lights when one of the color temperature to be transferred to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

1) These buttons also function as numeric keys when specifying the password.

*See "1-4-5. Changing and Applying the Password."*

## Section 1 Operation

### 22 SPLIT SCREEN button and lamp

To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

### 23 CROSSHATCH button and lamp

To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.

The crosshatch pattern is synchronized with the selected composite sync signal.

To turn off the pattern, press the button again.

### 24 PAL S/SECAM F/COMB S button and lamp

While monitoring a PAL signal, the demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected. By pressing the button to turn off the lamp, D (deluxe) mode is selected.

While monitoring a SECAM signal, the ID signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.

When the BKM-1411/1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected.

### 25 MATRIX button and lamp

Should normally be OFF (lamp not lit).

By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors. To turn off the matrix circuit, press the button again.

### 26 FILTER button and lamp

To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights.

To deactivate the filter for a wider frequency range, press the button again.

#### Note

In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

### 27 S.A.D (safe area display)/VITC/MARKER button and lamp

When the safe area is displayed with the BQ board (BKM-1470 safe area display) installed, the adjustment of the safe area size can be enabled.

When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

### 28 PIC SETUP (picture setup) button and lamp

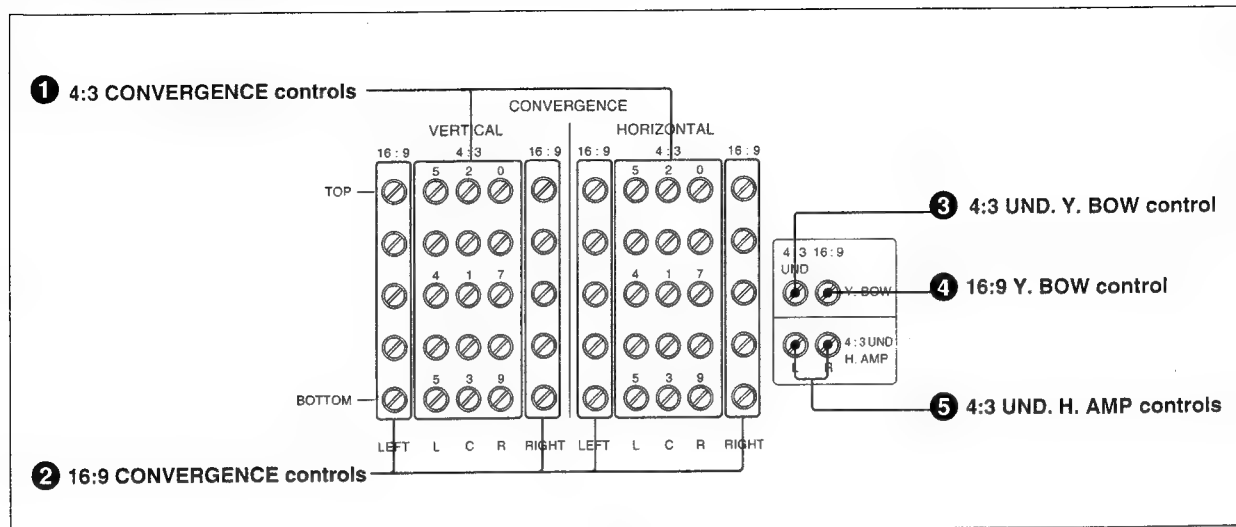
Use to match the black reference of the monitor with the black level of the input signal to be monitored.

By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.

See "1-6-2. Black Level Adjustment."



## DC board (Convergence adjustment section)



DC board

### 1 4:3 CONVERGENCE controls

Adjust the convergence of the 4:3-aspect normal picture. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally. Fifteen controls cover the entire screen so that each control adjusts the corresponding portion of the screen.  
See "1-5. Convergence Adjustments."

### 2 16:9 CONVERGENCE controls

Adjust the convergence of the 16:9-aspect picture at the right and left portions of the screen after adjusting it at the center of the picture using the 4:3 CONVERGENCE controls.

The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally.

See "1-5-3. Convergence of a 16:9-Aspect Picture."

### 3 4:3 UND. Y. BOW (underscan Y bow) control

Adjust the horizontal convergence at the top and bottom of the center of the 4:3-aspect underscanned picture.

See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

### 4 16:9 Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 16:9-aspect picture.  
See "1-5-3. Convergence of a 16:9-Aspect Picture."

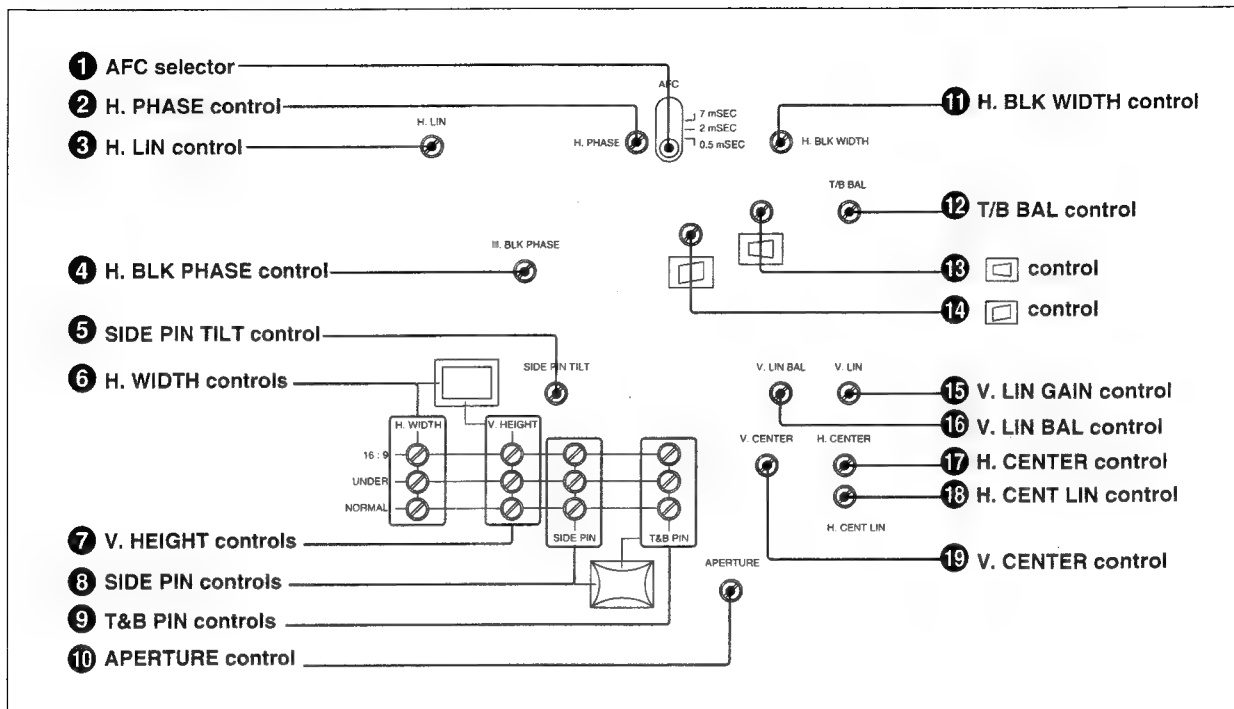
### 5 4:3 UND. H. AMP (underscan horizontal amplifier) controls

Adjust the horizontal convergence of the underscanned picture of the 4:3-aspect.

See "1-5-2. Convergence of a 4:3-Aspect Underscanned Picture."

## Section 1 Operation

### DA board (H.V. oscillator section)



DA board

#### 1 AFC (automatic frequency control) selector

Select the AFC time constant.

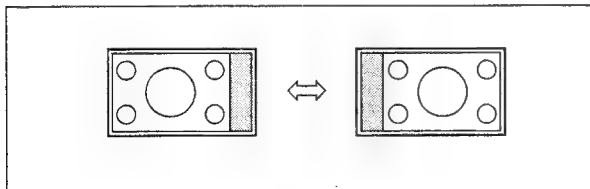
**0.5 mSEC (fast):** This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.

**2 mSEC (normal):** Normally set to this position.

**7 mSEC (slow):** This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.

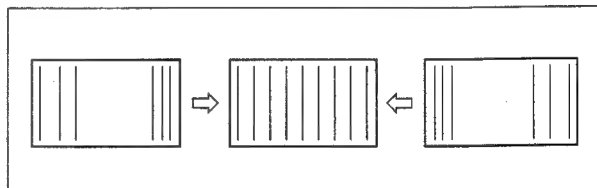
#### 2 H. PHASE (horizontal phase) control

Adjust the horizontal position of the picture.



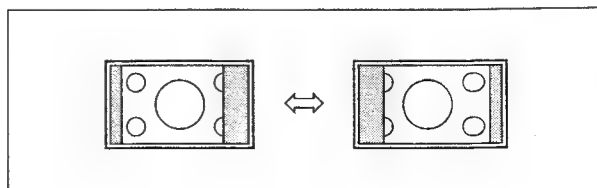
#### 3 H. LIN (horizontal linearity) control

Adjust the horizontal linearity of the picture.

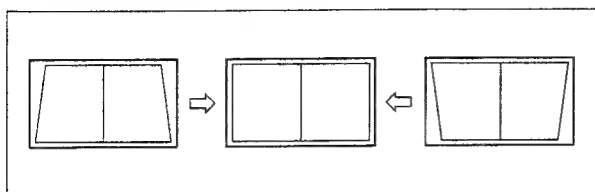


#### 4 H. BLK PHASE (horizontal blanking phase) control

Adjust the phase of the horizontal blanking at both sides of the screen.



- 5 SIDE PIN TILT (side pincushion tilt) control**  
Adjust the phase of the side pincushion distortion.



- 6 H. WIDTH (horizontal width) controls**  
Adjust the horizontal width of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

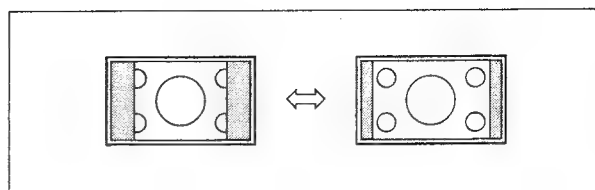
- 7 V. HEIGHT (vertical height) controls**  
Adjust the height of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

- 8 SIDE PIN (pincushion) controls**  
Correct the side pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

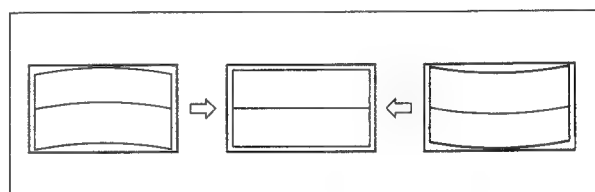
- 9 T&B PIN (top and bottom pincushion) distortion controls**  
Correct the top and bottom pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.


- 10 APERTURE control**  
Adjust the frequency response when the APERTURE switch on the front panel is depressed.

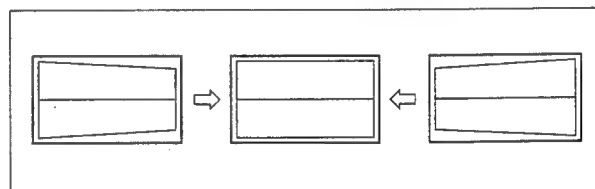
- 11 H. BLK WIDTH (horizontal blanking width) control**  
Adjust the width of the horizontal blanking.




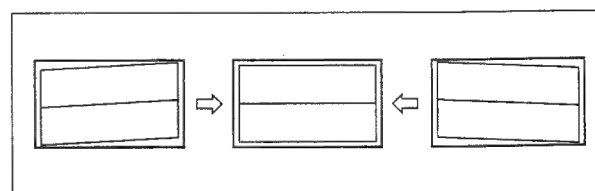
- 12 T/B BAL (top and bottom pincushion balance) control**  
Adjust the distortion at the center (X axis) of the picture.



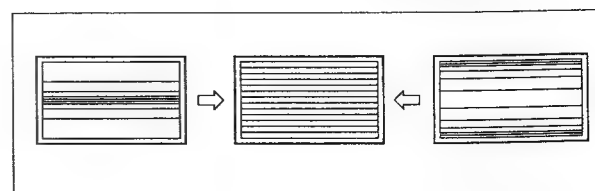
- 13  (trapezoid distortion) control**  
Correct the horizontal trapezoid distortion.



- 14  (parallelogram distortion) control**  
Correct the right angled distortion of the deflection yoke.



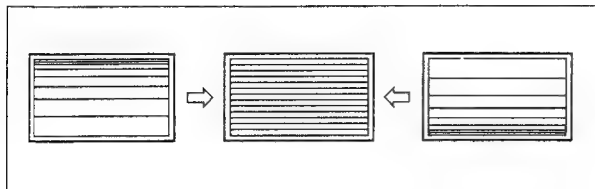
- 15 V. LIN GAIN (vertical linearity gain) control**  
Adjust the vertical linearity of the picture.



## Section 1 Operation

### 16 V. LIN BAL (vertical linearity balance) control

Adjust the balance of the vertical (Y axis) linearity of the picture.

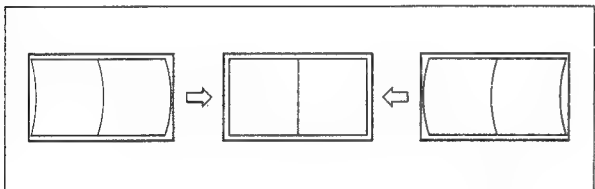


### 17 H. CENTER (horizontal centering) control

Adjust the horizontal position of the picture.

### 18 H. CENT LIN (horizontal centering linearity) control

Adjust the horizontal linearity at the center of the picture.



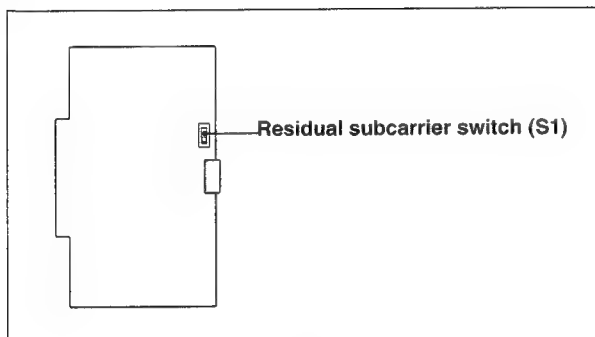
### 19 V. CENTER (vertical centering) control

Adjust the vertical position of the picture.

### 1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside the cabinet, see Section 2.

#### BJ board



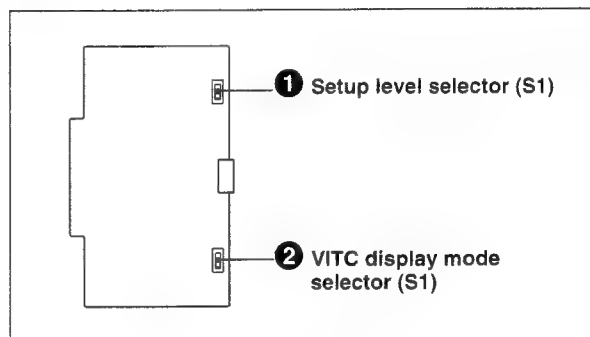
BJ board

#### Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, whether a residual subcarrier is preset, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

#### BH board



BH board

#### 1 Setup level selector (S2)

Select the setup level.

**0 IRE:** The setup level is 0%.

**AUTO:** The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.

*See "1-4-7. Defining the Monitor Configuration."*

**7.5 IRE:** The setup level is 7.5%.

The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from -2.5% through +12.5%.

#### 2 VITC display mode selector (S1)

Use to invert the character and background colors for VITC display.

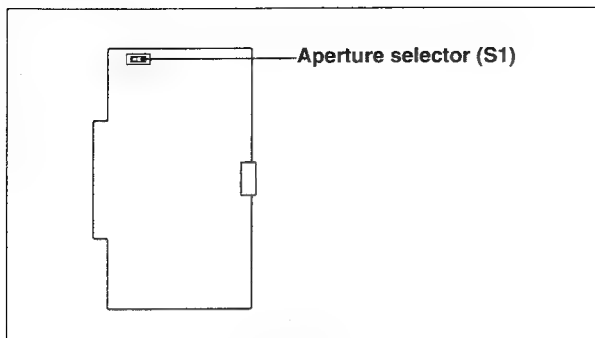
**Upper position:** Factory-preset position. The VITC is displayed in white characters on a black background.

**Lower position:** The VITC is displayed in black characters on a white background.

*For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.*

## Section 1 Operation

### BG board



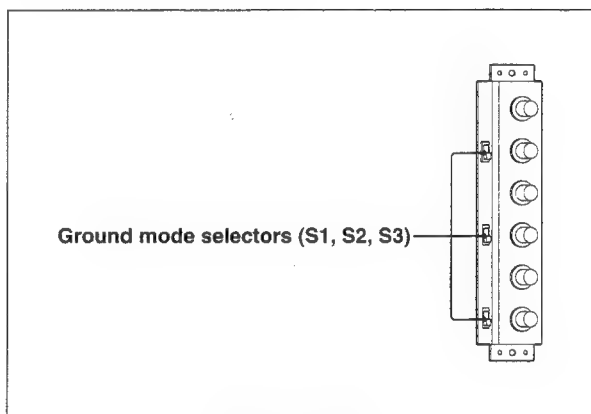
BG board

#### Aperture selector (S1)

Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

### QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

#### Ground mode selectors (S1, S2, S3)

The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

**S (nonfloating):** Factory-preset position.

Normally keep the selectors at this position.

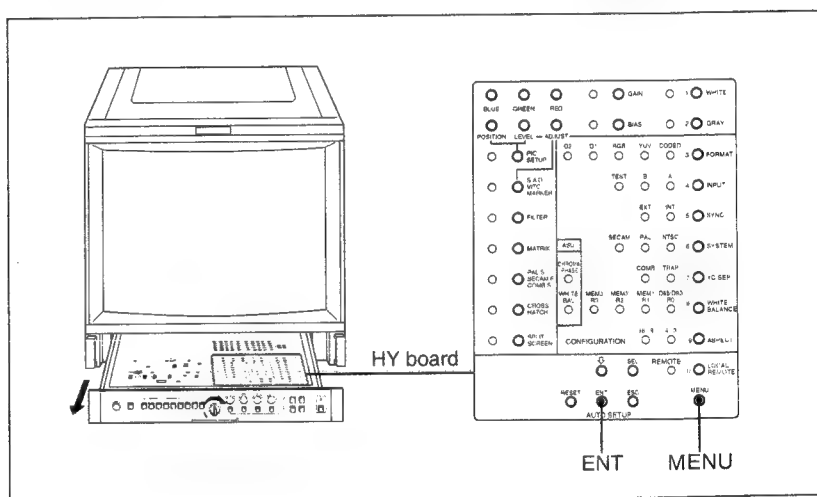
**F (floating):** When there is hum in the input signal to be monitored, set to this position. Common mode noise will be rejected.

## 1-4. Menu Operations

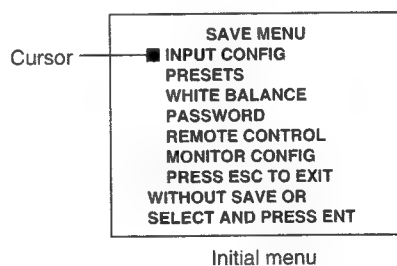
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

### 1-4-1. Starting with the menu operations

For the menu operations, use the buttons on the HY board in the drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



Initial menu

**INPUT CONFIG** (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.

**PRESETS:** To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.

**WHITE BALANCE:** To adjust the white balance.

**PASSWORD:** To specify and activate/deactivate the password.

**REMOTE CONTROL:** To assign the remote control functions.

**MONITOR CONFIG** (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

## Section 1 Operation

### To select a menu option

Move the cursor with the  $\downarrow$  button to the line of the desired menu option and press the ENT button.

Pressing the  $\downarrow$  button moves the cursor downward and, if at the bottom, to the top.

### To cancel the menu operation on the way

Press the ESC button.

At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

## 1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

Factory-set configuration

Signal	INPUT selectors			
	1	2	3	4
FORMAT	CODED	CODED	COMPONENT	RGB
INPUT	A	B	—	—
SYNC	INT	INT	INT	INT
SYSTEM <sup>a)</sup>	NTSC/PAL	NTSC/PAL	—	—
ASPECT	4 : 3	4 : 3	4 : 3	4 : 3
YC SEP <sup>b)</sup>	COMB	COMB	—	—

a) NTSC for the BVM-1911 and PAL for the BVM-2011P.

b) Only for BVM-1911. The INPUT selectors 1 and 2 on the BVM-2011P have been set to TRAP.

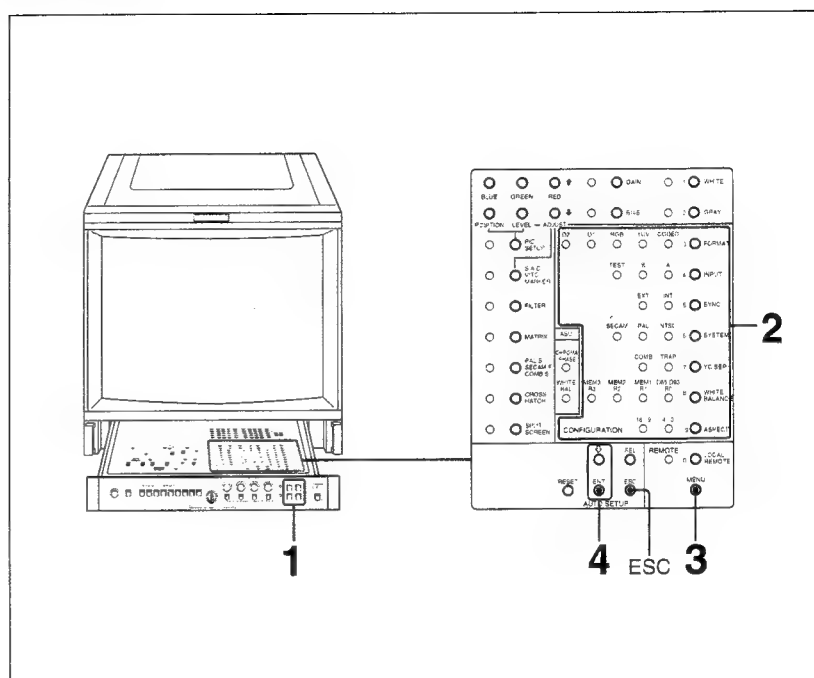
Using the CONFIGURATION buttons on the HY board in the drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation.

The stored configuration is always obtained when the assigned INPUT selector is pressed.

When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed.



## Operation



- 1** Press one of the INPUT selectors on the front panel.
- 2** Using the following CONFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.
  - FORMAT:** Select the signal format (CODED, YUV, RGB, D-1 or D-2).
  - INPUT:** Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.
  - SYNC:** Select the sync mode (INT or EXT).
  - SYSTEM:** Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.
  - YC SEP:** Select the filter when you select NTSC or PAL for the color system.
  - WHITE BALANCE:** Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.  
*See "1-4-4. Selecting the White Balance."*
  - ASPECT:** Select the picture aspect (4:3 or 16:9).
- 3** When the settings are completed, press the MENU button. The initial menu is displayed.

## Section 1 Operation

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- 4 Should the cursor on the initial menu not be located at INPUT CONFIG, press the ↓ button until it returns to INPUT CONFIG, and press the ENT button.

**Note**

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.

The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

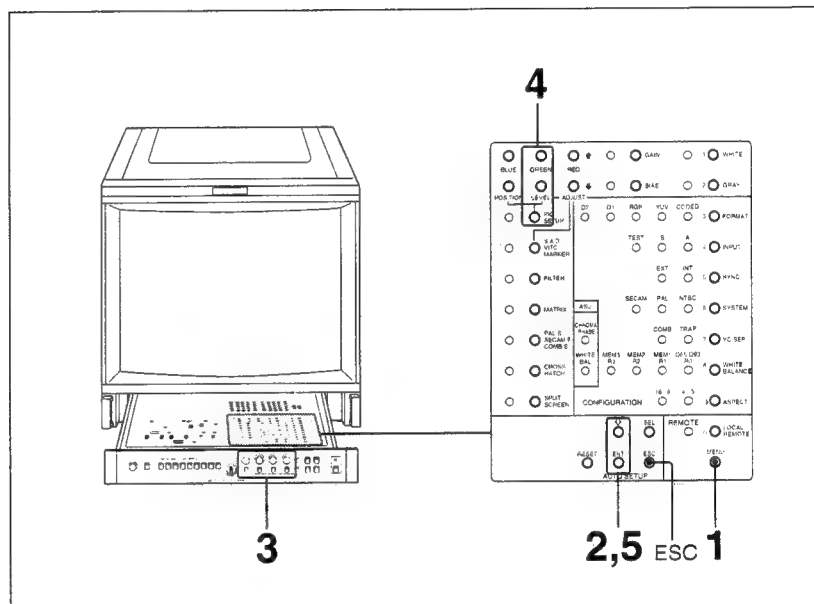
**To cancel the operation**

Press the ESC button before pressing the ENT button in step 4.

### 1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

#### Operation



- 1 Press the MENU button.  
The initial menu is displayed.
- 2 Press the ↓ button until the cursor reaches PRESETS, then press the ENT button.  
The SAVE PRESETS menu is displayed.

SAVE PRESETS			
■ TEXT ON/OFF			
DATA REGISTER R0 *			
DATA REGISTER R1			
DATA REGISTER R2			
DATA REGISTER R3			
PHASE	100	BRIGHT	100
CHROMA	100	CONTRAST	100
PICTURE SETUP LEVEL		100	
SELECT AND PRESS ENT			

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

#### Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

## Section 1 Operation

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- 3** Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.
- 4** Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

**Note**

The adjustments in steps 3 and 4 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

**To adjust while observing the picture on the screen**, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.

For the picture setup level, follow the procedure in "1-6-2. Black Level Adjustment."

To return to the SAVE PRESETS menu, press the ENT button again.

- 5** Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in step 5.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

**To cancel the operation**

Press the ESC button before pressing the ENT button in step 5.

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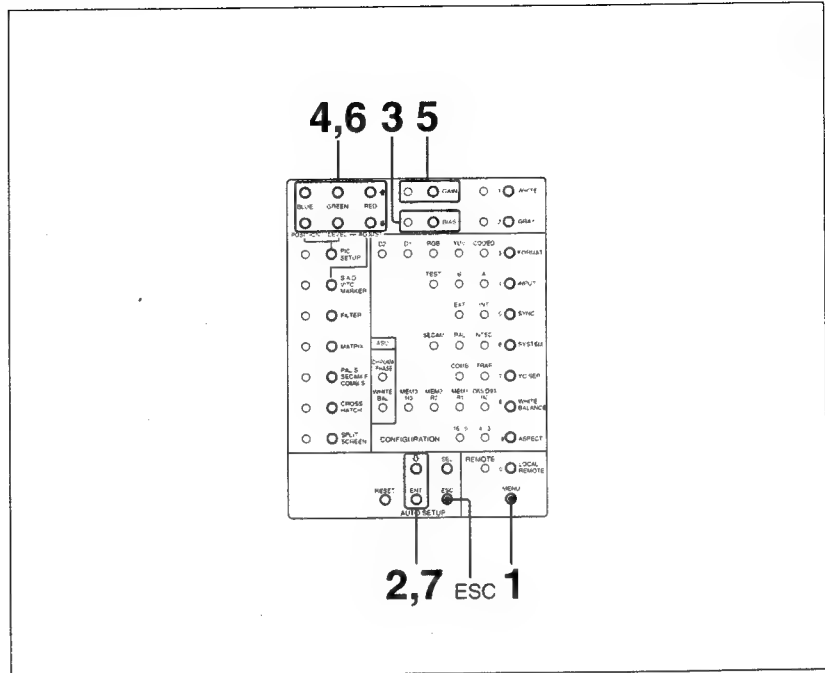
### 1-4-4. Selecting the White Balance

The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D6500 has been stored in all the registers

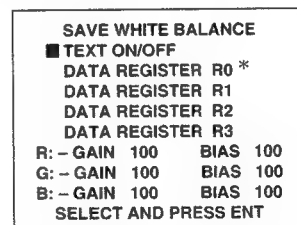
**Note**

The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

## Operation



- 1** Press the MENU button.  
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches WHITE BALANCE, then press the ENT button.  
The SAVE WHITE BALANCE menu is displayed.



An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

### Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

## Section 1 Operation

- 3** Press the BIAS button.  
The associated lamp lights.
- 4** Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.
- 5** Press the GAIN button.  
The associated lamp lights.
- 6** Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

### Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

**To adjust while observing the picture on the screen**, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.

Then, adjust the white balance by following the procedure in "1-6-1. White Balance Adjustment."

To return to the SAVE WHITE BALANCE menu, press the ENT button again.

- 7** Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

### To cancel the operation

Press the ESC button before pressing the ENT button in step 7.

### 1-4-5. Changing and Applying the Password

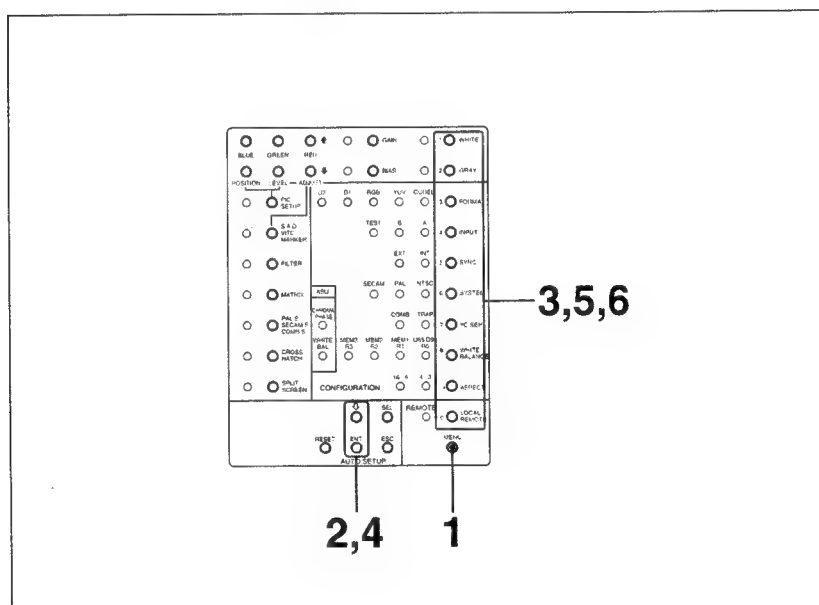
The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

The message **"PLEASE ENTER PASSWORD"** is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message **"INCORRECT ENTRY"** is momentarily displayed and the menu operation is canceled.

#### To change the password

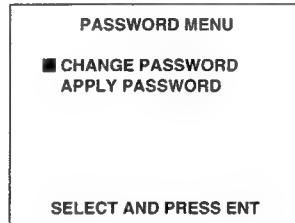
"9999" has been specified for the password at the factory. Change it to your desired four-digit number as follows.



- 1 Press the MENU button.  
The initial menu is displayed.

## Section 1 Operation

- 2 Press the ↓ button until the cursor reaches PASSWORD, then press the ENT button.  
The message "ENTER PASSWORD" is displayed.
- 3 Enter the current password (Factory-set: 9999).  
The PASSWORD MENU is displayed.



- 4 Select the CHANGE PASSWORD option.  
The message "ENTER NEW PASSWORD" is displayed.
- 5 Enter any desired four-digit number as your new password using the buttons labeled 0 to 9.  
The message "PLEASE RE-ENTER NEW PASSWORD TO CONFIRM" is displayed.
- 6 Enter the new password again.  
The message "PASSWORD CHANGED" is displayed and the new password is now valid.

**Note**

If an incorrect password is entered, "INCORRECT ENTRY. PASSWORD NOT CHANGED" is displayed and the menu operation is canceled.

**To cancel the operation**

Press the ESC button before re-entering the new password in step 6.



## To apply the password

The specified password can be activated/deactivated independently for each of the initial menu options and, with the BKM-2056 installed, the auto setup option.

- 1** Perform steps 1 through 3 mentioned in “To change the password.”
- 2** By pressing the ↓ button and then ENT button, select the APPLY PASSWORD option.  
The APPLY PASSWORD menu is displayed.

APPLY PASSWORD	
■ INPUT CONFIG	NO
WHITE BALANCE	NO
PRESETS	NO
AUTO SETUP	NO
REMOTE CONTROL	NO
MONITOR CONFIG	NO
SAVE AND APPLY	
SELECT AND PRESS ENT	

NO is displayed for each option for which the password is not activated.

YES is displayed for each option for which the password is activated.

- 3** By pressing the ↓ button, move the cursor to the option for which the password application is to be changed.
- 4** Press the ENT button to change NO to YES or vice versa.  
(Pressing the button toggles the YES/NO setting.)

Repeat steps 3 and 4 for the other options as desired.

- 5** When the password application setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.  
The message “PASSWORD APPLIED” is momentarily displayed, and the monitor returns to normal status.

## To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

## Section 1 Operation

### 1-4-6. Assigning the Remote Control Functions

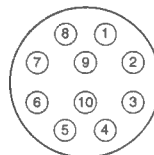
The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.

The mode change is achieved through the REMOTE CONTROL menu operation.

The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

#### STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

Function			Pin No.						
INPUT	SYNC	MODE	1	2	3	4	5	6	7
INPUT 1	INT	AUTO	O	O	—	O	S	—	—
		MONO	S	O	—	O	S	—	—
	EXT	AUTO	O	O	—	S	S	—	—
		MONO	S	O	—	S	S	—	—
INPUT 2	INT	AUTO	O	S	—	O	S	—	—
		MONO	S	S	—	O	S	—	—
	EXT	AUTO	O	S	—	S	S	—	—
		MONO	S	S	—	S	S	—	—
VITC OFF			—	—	—	—	—	S	—
VITC HOLD			—	—	—	—	—	O	S
TALLY ON			—	—	S	—	—	—	—

S: Short-circuit with pin No.8

O: Open

—: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.

Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

...the ...

### Front panel

**MONO MODE** switch (AUTO/MONO mode switching)

**WHITE** button (ON/OFF)

YC SEP button (COMB/TRAP filter switching)

**S.A.D./VITC/MARKER button (S.A.D. or VITC ON/OFF)**

**MATRIX** button (ON/OFF)

**CROSSHATCH** button (ON/OFF)

BIEN SCREEN button (ON/OFF)

The diagram shows the front control panel of a television. The panel includes a large screen, a speaker grille, and a control panel with various buttons and knobs. The controls are numbered 1 through 9:

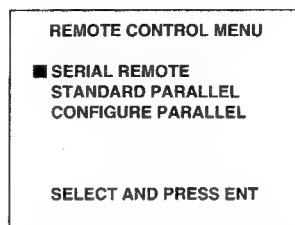
- 1:** Points to the **POWER** button.
- 2, 3, 5, 8:** Points to the **CH** (Channel) buttons.
- 4, 7:** Points to the **SEL** (Select) button.
- 6:** Points to the **RECALL** button.
- 6:** Points to the **RECALL** button.
- 6:** Points to the **RECALL** button.
- 6:** Points to the **RECALL** button.
- 6:** Points to the **RECALL** button.
- 9:** Points to the **RECALL** button.

- 1** Press the MENU button to display the initial menu.

## Section 1 Operation

- 2** Move the cursor to REMOTE CONTROL and press the ENT button.

The REMOTE CONTROL MENU is displayed.

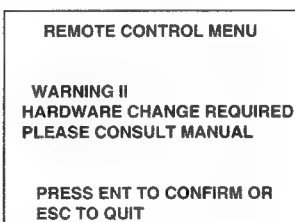


Note that SERIAL REMOTE is for future use.

- 3** To change the pin assignment of the REMOTE connector, move the cursor to CONFIGURE PARALLEL and press the ENT button.

**To resume the factory-set pin assignment,** move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-34.)

The following display appears.

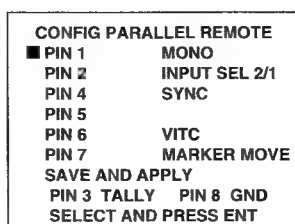


### Hardware Change

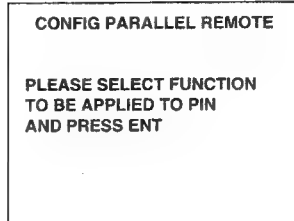
When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

- 4** Press the ENT button again to confirm the mode change in step 3. When STANDARD PARALLEL has been selected in step 3, the selected mode is now activated and the monitor returns to normal status.

When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.



- 5** Move the cursor with the  $\downarrow$  button to the pin whose assignment is to be changed, then press the ENT button.  
The following message appears.



- 6** Press the button on the front panel or in the drawer (listed on page 1-35) whose function is to be assigned to the pin selected in step 5.
- 7** Press the ENT button.

Repeat steps 5, 6 and 7 for the other pins as desired.

- 8** When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.  
The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.
- 9** Press the LOCAL/REMOTE button to set the monitor to the remote control mode.

**To cancel the operation**

Press the ESC button before pressing the ENT button in step 8.

**Notes**

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.

## Section 1 Operation

### 1-4-7. Defining the Monitor Configuration

In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

**OPTION INSTALLATION:** To specify the installed optional boards.

**D1 CONFIGURATION:** To specify the system in which D-1 signals are to be received.

**COMPONENT OFFSET:** To set the setup level for component signals

**NTSC OFFSET:** To set the setup level for NTSC signals.

**MONITOR TYPE:** To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

#### To start with the MONITOR CONFIG menu operation

- 1** Press the MENU button to display the initial menu.
- 2** Press the ↓ button until the cursor reaches MONITOR CONFIG, then press the ENT button.  
The MONITOR CONFIGURATION menu is displayed.

MONITOR CONFIGURATION

■ OPTION INSTALLATION  
D1 CONFIGURATION  
COMPONENT OFFSET  
NTSC OFFSET  
MONITOR TYPE  
RESTORE FACTORY SETUP

SELECT AND PRESS ENT

## To specify the installed optional boards

- 1 Set the cursor to OPTION INSTALLATION on the MONITOR CONFIGURATION menu and press the ENT button. The OPTION INSTALLATION menu 1 is displayed.

OPTION INSTALLATION 1	
■ AUTO SETUP	YES
D1 OPTION	YES
D2 OPTION	YES
NTSC DECODER	YES
NTSC COMB ADP	YES
PAL DECODER	YES
PAL COMB ADP	YES
OTHER OPTIONS	
SELECT AND PRESS ENT	

- 2 By pressing the ↓ button, move the cursor to the board for which the YES/NO setting must be changed, and press the ENT button. YES must be displayed for the installed board and NO for uninstalled boards. Pressing the ENT button toggles the YES/NO setting.

Repeat step 2 for the other boards as necessary.

- 3 Move the cursor to OTHER OPTIONS and press the ENT button. The OPTION INSTALLATION menu 2 is displayed.

OPTION INSTALLATION 2	
■ PAL-M DECODER	YES
SECAM DECODER	YES
RGB/COMP O/P	YES
VITC BOARD	YES
SAFE AREA	YES
BLACK GENER	YES
OTHER OPTIONS	
SAVE AND APPLY	
SELECT AND PRESS ENT	

- 4 Set YES/NO for the boards listed in menu 2 in the same manner as with menu 1.
- 5 When the YES/NO setting is completed, move the cursor to SAVE AND APPLY and press the ENT button. The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

## Section 1 Operation

### To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES.

- 1 Move the cursor with the  $\downarrow$  button to D1 CONFIGURATION on the MONITOR CONFIGURATION menu and press the ENT button.

The D1 CONFIGURATION menu is displayed.

D1 CONFIGURATION	
■ PAL	*
NTSC	
SECAM	
SPECIFY SETTING OF LOCAL SWITCH ON BV BOARD	
SELECT AND PRESS ENT	

The asterisk indicates the current setting.

- 2 Move the cursor with the  $\downarrow$  button to the system matching setting of the local switch on the BV board.
- 3 Press the ENT button.  
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

### To set the setup level for component signals

- 1 Move the cursor with the  $\downarrow$  button to COMPONENT OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.  
The COMPONENT OFFSET menu is displayed.

COMPONENT OFFSET	
■ N-10	*
BETACAM 0	
BETACAM 7.5	
SELECT AND PRESS ENT	

The asterisk indicates the current setting.

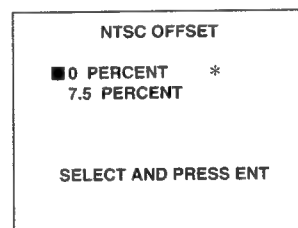
- 2 Move the cursor with the  $\downarrow$  button to the appropriate setup level.  
**N-10:** When supplying the 100/0/100/0 component signals.  
**BETACAM 0:** When supplying the 100/0/75/0 component signals.  
**BETACAM 7.5:** When supplying the 100/7.5/75/7.5 component signals.



- 3** Press the ENT button.  
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

### To set the setup level of NTSC signals

- 1** Move the cursor with the ↓ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.  
The NTSC OFFSET menu is displayed.

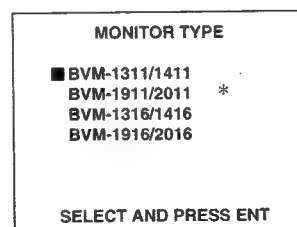


The asterisk indicates the current setting.

- 2** Move the cursor with the ↓ button to the appropriate setup level.  
**0 PERCENT:** When supplying 0 IRE NTSC signals.  
**7.5 PERCENT:** When supplying the 7.5 IRE NTSC signals.
- 3** Press the ENT button.  
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

### To define the model of your monitor

- 1** Move the cursor with the ↓ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button.  
The MONITOR TYPE menu is displayed.



The asterisk indicates the current setting.

- 2** Move the cursor with the ↓ button to the model name of your monitor.
- 3** Press the ENT button.  
The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

## Section 1 Operation

### To restore the factory setup

- 1 Move the cursor with the ↓ button to RESTORE FACTORY SETUP in the MONITOR CONFIGURATION menu and press the ENT button.  
The following message is displayed.

**RESTORE FACTORY SETUP**

**WARNING !!**  
**THIS WILL DESTROY ALL**  
**MANUALLY ENTERED DATA**  
**AND CONFIGURATIONS**

**PRESS ENT TO CONFIRM**  
**OR ESC TO QUIT**

- 2 Press the ENT button.  
All the changed menu options returns to the factory-set conditions.

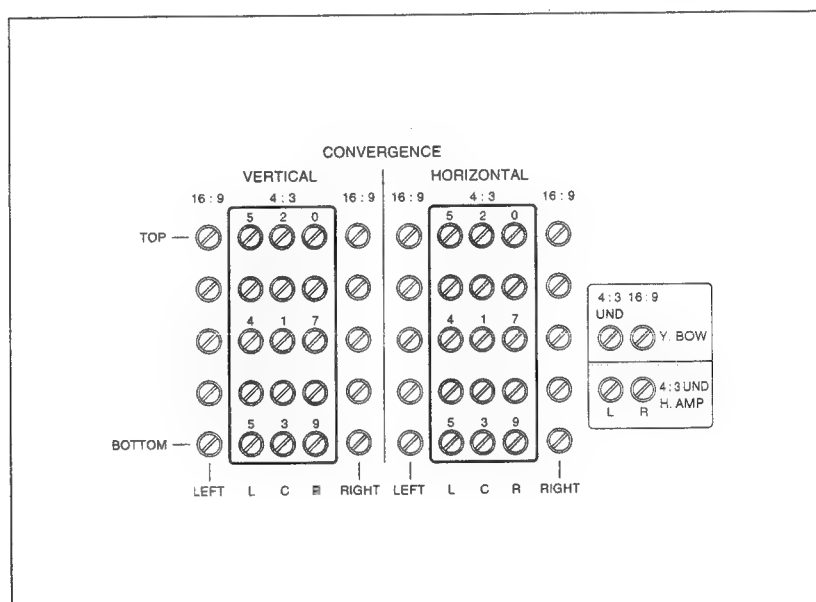
To cancel the restoration, press the ESC button before pressing the ENT button in step 2.

## 1-5. Convergence Adjustments

For the convergence adjustment, use the CONVERGENCE controls on the DC board inside the drawer. Use the supplied screwdriver to turn these controls.

### 1-5-1. Convergence of a 4:3-Aspect Normal Picture

Adjust the convergence of 4:3 scan mode using the 4:3 controls.

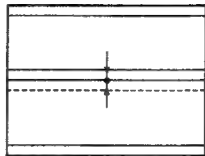
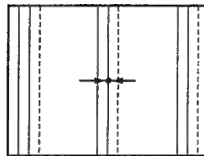
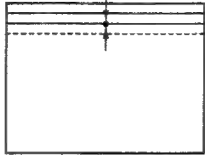
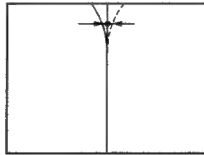
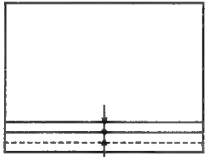
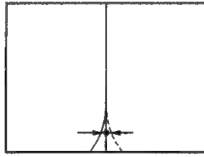
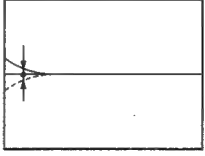
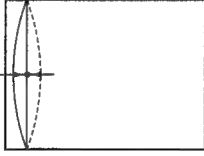
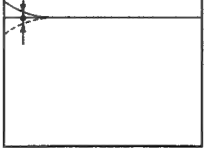
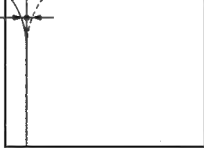
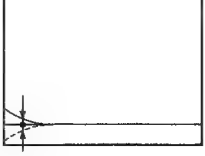
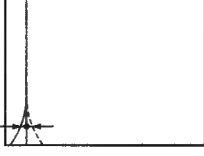



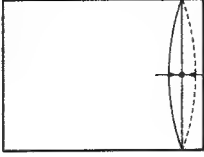
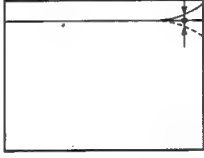

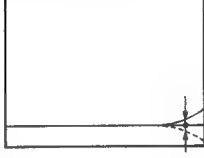
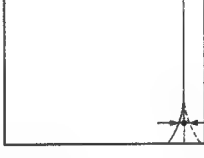
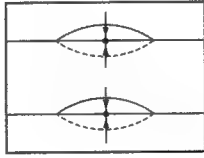
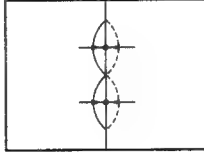
DC board

- Numbers 1 to 9 in the illustration above refer to the sequence of operations.
- The HORIZONTAL controls adjust the convergence horizontally, and the VERTICAL controls adjust it vertically.
- When adjusting the convergence, observe the portion of the screen indicated by arrows in the figures on the subsequent pages. The red and blue beams move symmetrically to the green beam.

## Section 1 Operation

Adjust the convergence at the corresponding portion of the screen, as follows.

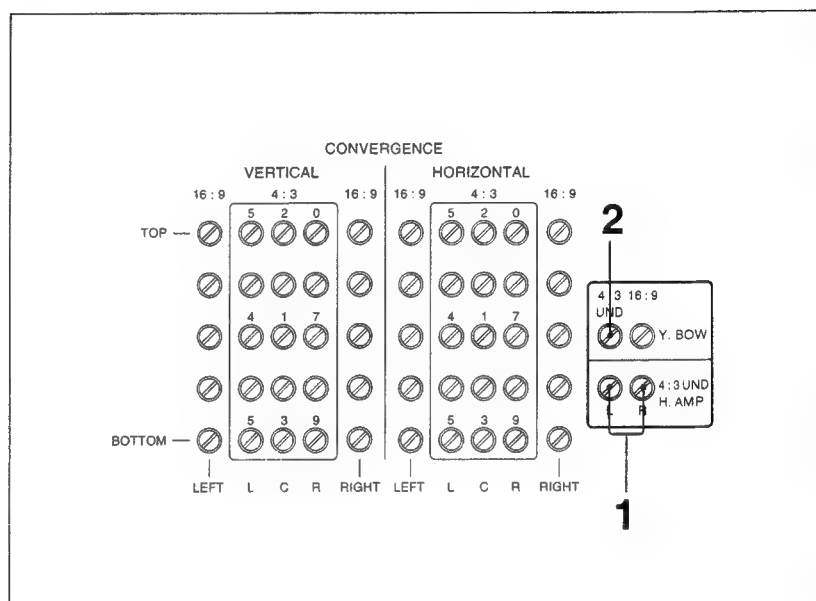
VERTICAL	HORIZONTAL
<b>1</b> At center 	
<b>2</b> At center top 	
<b>3</b> At center bottom 	
<b>4</b> At left center 	
<b>5</b> At top left 	
<b>6</b> At bottom left 	

VERTICAL	HORIZONTAL
<b>7</b> At right center 	
<b>8</b> At top right 	
<b>9</b> At bottom right 	
<b>10</b> Adjust the convergence between the center and top and between the center and bottom on the screen as required.  	

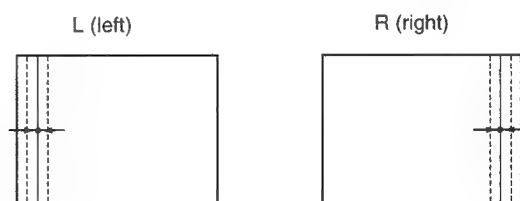
## Section 1 Operation

### 1-5-2. Convergence of a 4:3-Aspect Underscanned Picture

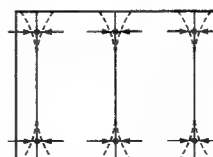
Adjust the convergence of 4:3 underscan mode using the 4:3 UND H. AMP and 4:3 UND Y. BOW controls after the convergence adjustment of normal scan mode is completed.



- 1** Adjust the horizontal convergence with the 4:3 UND. H. AMP controls.

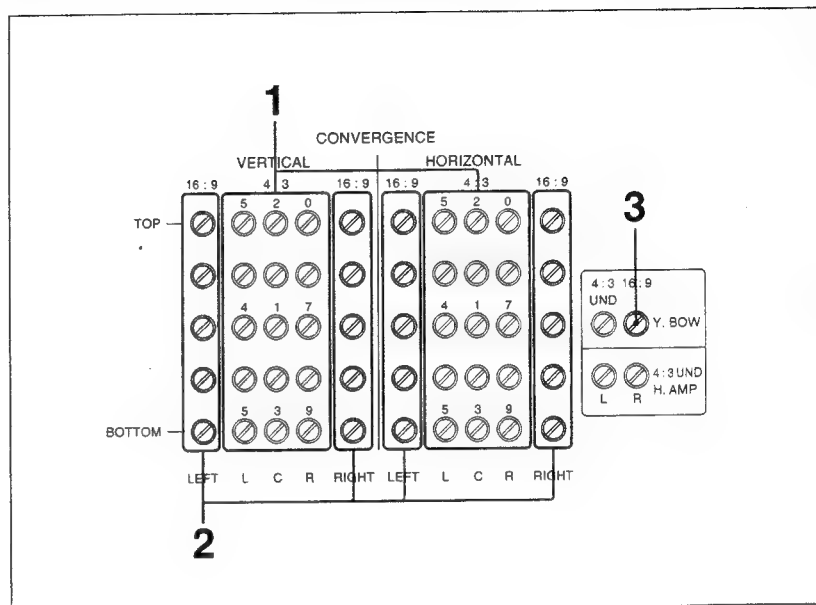


- 2** Adjust the horizontal convergence at the corners of the picture with the 4:3 UND. Y. BOW control.



### 1-5-3. Convergence of a 16:9-Aspect Picture

Adjust the convergence of 16:9 scan mode.



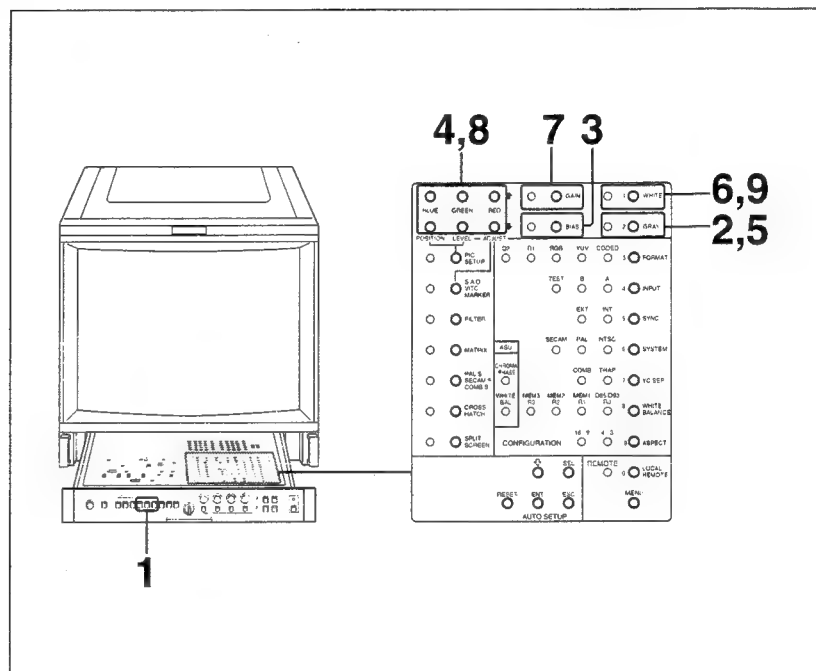
- 1** Adjust the convergence at the center of the screen following the procedure mentioned in "1-5-1. Convergence of a 4:3-aspect normal picture."
- 2** Adjust the convergence at the right and left portions of the screen using the 16:9 controls.
- 3** Adjust the horizontal convergence at the corners using the 16:9 Y. BOW control.

## Section 1 Operation

### 1-6. Picture Adjustments

#### 1-6-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



- 1** Display a test signal on the screen.
- 2** Press the GRAY button.  
The associated lamp lights and the internal gray signal is displayed on the screen.
- 3** Press the BIAS button.  
The associated lamp lights.
- 4** Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- 5** Press the GRAY button again.  
The associated lamp goes off and the internal gray signal disappears.
- 6** Press the WHITE button.  
The associated lamp lights and the internal 100% white signal is displayed on the screen

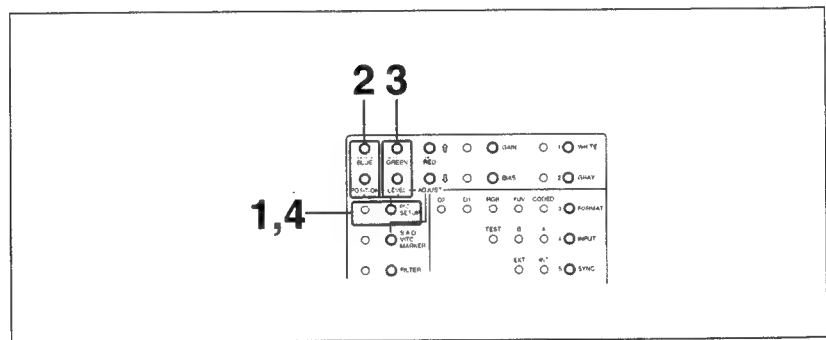


- 7** Press the GAIN button.  
The associated lamp lights.
- 8** Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- 9** When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

*For white balance adjustment using a color analyzer or equivalent, see Section 2.*

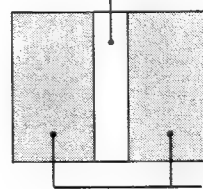
## 1-6-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



- 1** Press the PIC SETUP button.  
The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.

Input signal checking zone



- 2** Press the POSITION buttons ↑ or ↓ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.
- 3** Press the LEVEL buttons ↑ or ↓ to match the brightness of the black reference area with that of the input black signal.
- 4** Press the PIC SETUP button again.

## Section 1 Operation

### 1-7. Specifications

#### General

System	BVM-1911: 525 lines per picture, 60 fields per second interlaced, NTSC BVM-2011P: 625 lines per picture, 50 fields per second interlaced, PAL
CRT	Super Fine Pitch Trinitron 0.3 mm aperture grille, 90-degree deflection, 36 mm dia. in-line gun Effective picture size: 291 × 384 mm (h/w) (11 <sup>1</sup> / <sub>2</sub> × 15 <sup>1</sup> / <sub>8</sub> inches) 482 mm (19 inch) picture measured diagonally
Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 minutes to meet specifications
Anode voltage	Properly adjusted HV 27 kV at zero beam current
Power consumption	Typical: 145 W Maximum: 185 W
Power requirements	BVM-1911: 100-120 V AC ±10%, 50/60 Hz BVM-2011P: 220-240 V AC ±10%, 50/60 Hz
Dimensions	448 × 455 × 584 mm (w/h/d) (17 <sup>3</sup> / <sub>4</sub> × 18 × 23 inches) including projecting parts and controls
Mass	43 kg (94 lb 13 oz)

#### Inputs/outputs

Video inputs	BNC type (5 inputs with 5 loop-through outputs) VIDEO A/B, TEST, R/G/B: 0.714 Vp-p noncomposite or 1 Vp-p composite ±6 dB positive, high-impedance Y: Composite, 1.0 Vp-p ±6 dB, high-impedance R-Y/B-Y: 0.7 Vp-p ±6 dB, high-impedance
Sync input	EXT SYNC: BNC type (1 input with 1 loop-through output) 1 to 8 Vp-p negative, high-impedance
Input return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Video outputs	DECODER OUT: BNC type (3) Output decoded signals only when BKM-1440 is installed.
Remote control	REMOTE: 10-pin connector (1)
Probe receptacle	AUTO SETUP PROBE: 12-pin connector (1)

### Video signal

#### Luminance channel (RGB and composite signals)

Differential gain	Within 2% for a luminance from 0 to 103 cd/m <sup>2</sup>
Differential phase	Within 2° for a luminance from 0 to 103 cd/m <sup>2</sup>
Frequency response	Monochrome mode: 100 Hz to 8 MHz $\pm 1$ dB (aperture correction at 0) Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-1911) or 4.43 MHz (BVM-2011P) region RGB mode: 100 Hz to 10 MHz $\pm 1$ dB

#### Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	$\pm 1^\circ$ (standard input signal)
Phase control range	More than $\pm 15^\circ$ (standard input signal)
Chroma gain control range	More than $\pm 6$ dB

#### Chrominance/luminance

Time error	Less than 30 nsec
Gain error	Less than 5%
Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)

#### DC restoration (RGB and composite signals)

Back porch type  
Back porch level: Within 1% of peak luminance, 10% to 90% (average picture level)

### Synchronization

AFC time constant	0.5 msec (fast), 2 msec (normal) or 7 msec (slow)
Line pull range/line hold range	More than $\pm 500$ Hz at 0.5 msec time constant
Vertical blanking time	Normal: Within 1 msec. Underscan: Within 0.8 msec.
Horizontal retrace time	Within 10 $\mu$ sec

## Section 1 Operation

### Picture performance

Normal scan	5% overscan of CRT effective screen area (adjustable range more than $\pm 15\%$ )
Underscan	3% underscan of CRT effective screen area (adjustable range more than $\pm 15\%$ )
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 0.5% of the picture height, out of area 1%
Color temperature	D6500, adjustable to other color temperatures
Nominal chromaticity coordinates	BVM-1911: SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-2011P: EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

Convergence error	Error: Less than $\pm 0.005$ Central area: Less than 0.4 mm Periphery: Less than 0.7 mm
Calibrated constant	103 cd/m <sup>2</sup> at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0% to 100% APL at 103 cd/m <sup>2</sup> peak luminance
Scan delay	Horizontal: Approx. $\frac{1}{4}$ line Vertical: Approx. $\frac{1}{2}$ field
Resolution	More than 900 TV lines (center, at 103 cd/m <sup>2</sup> luminance)

### Environment

Operating temperature	0° C to 40° C (32° F to 104° F)
Optimum temperature range	20° C to 30° C (68° F to 86° F)
Humidity	0 to 90%
Altitude	Approx. 3,050 m (10,000 feet) max.

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### **Supplied accessories**

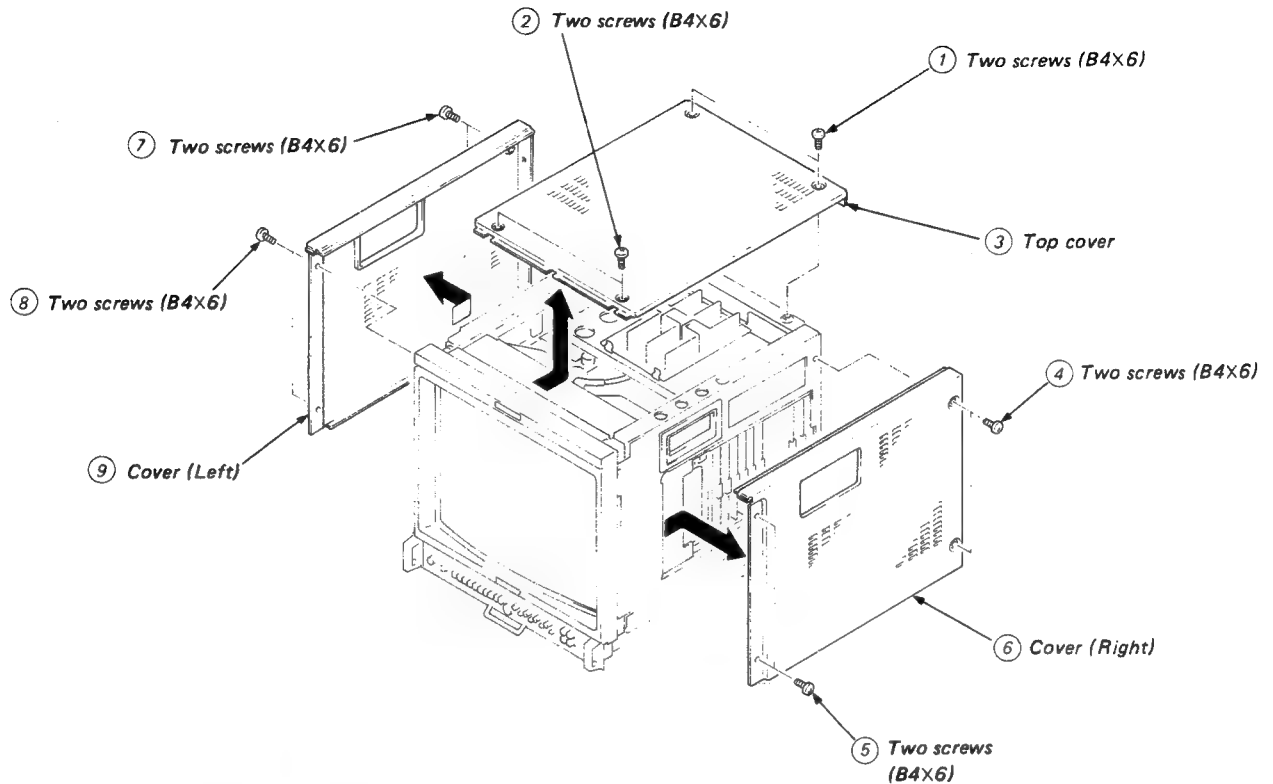
AC power cord (1)  
Cord stopper (1)  
Screwdriver (1)  
Drawer keys (2)  
Extension board (1)  
10-pin connector (1)  
Fuses (2)  
Tally number plates (1 set)  
Operation and maintenance manual (1)

Design and specifications are subject to change without notice.

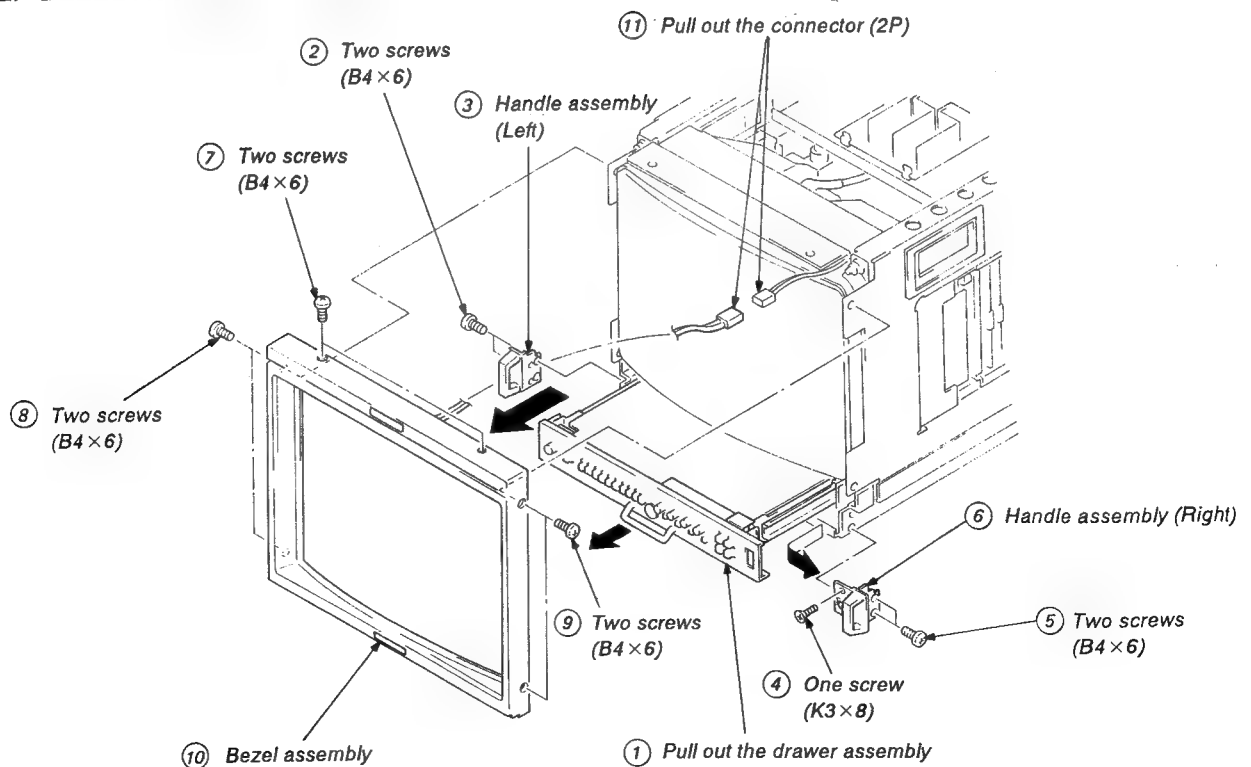


## SECTION 2 DISASSEMBLY

### 2-1. COVER REMOVAL

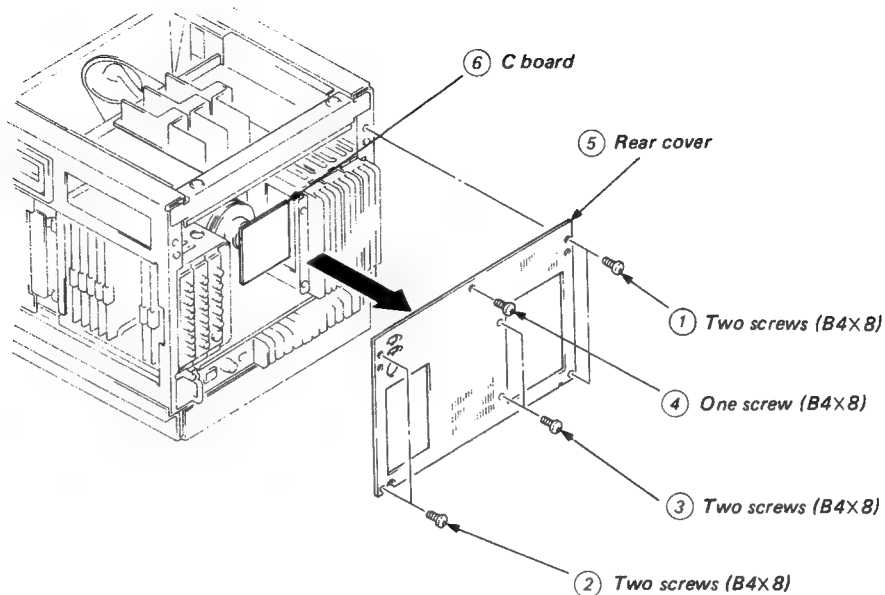


### 2-2. BEZEL ASSEMBLY REMOVAL



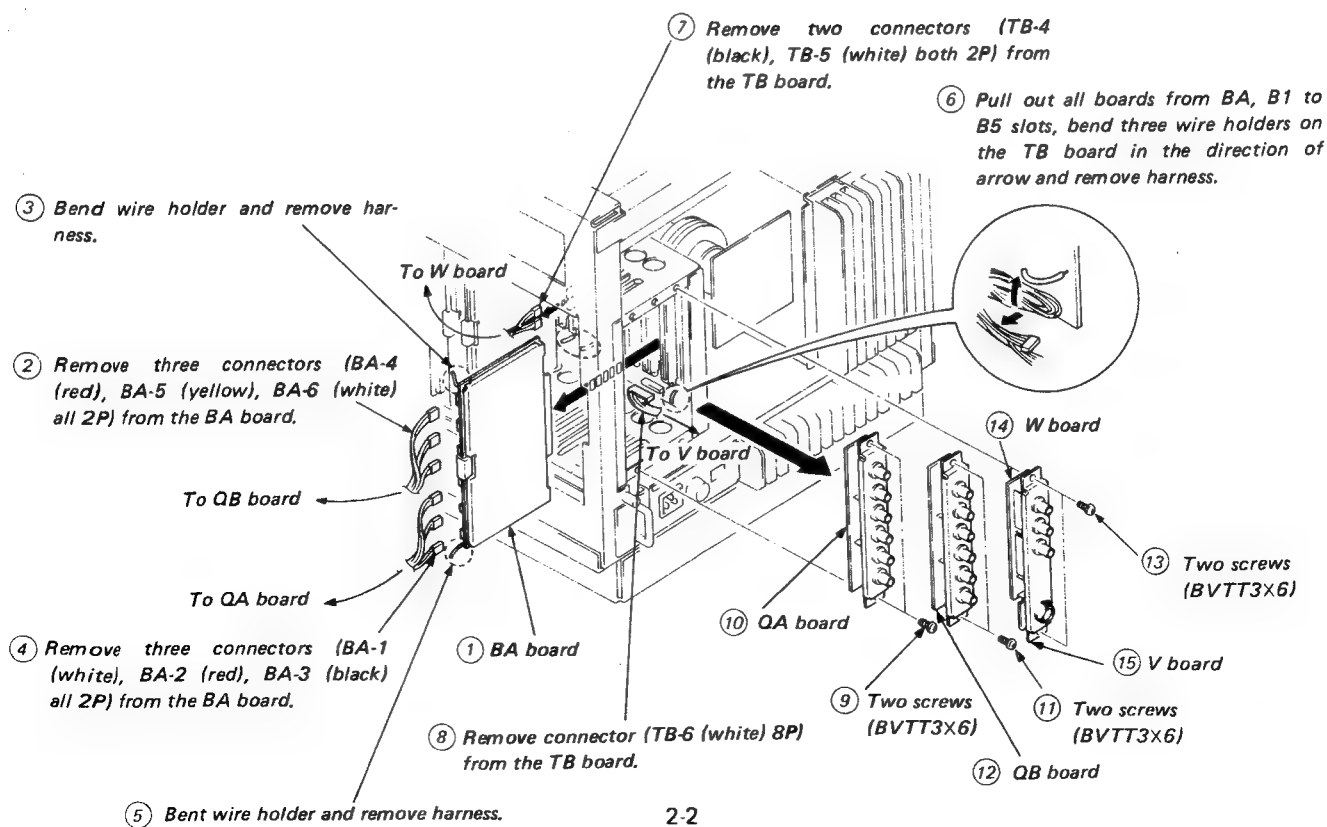
### 2-3. CHECK OF C BOARD

**Note:** Do it after removing cover (Right, Left).  
(Refer to 2-1. COVER REMOVAL)



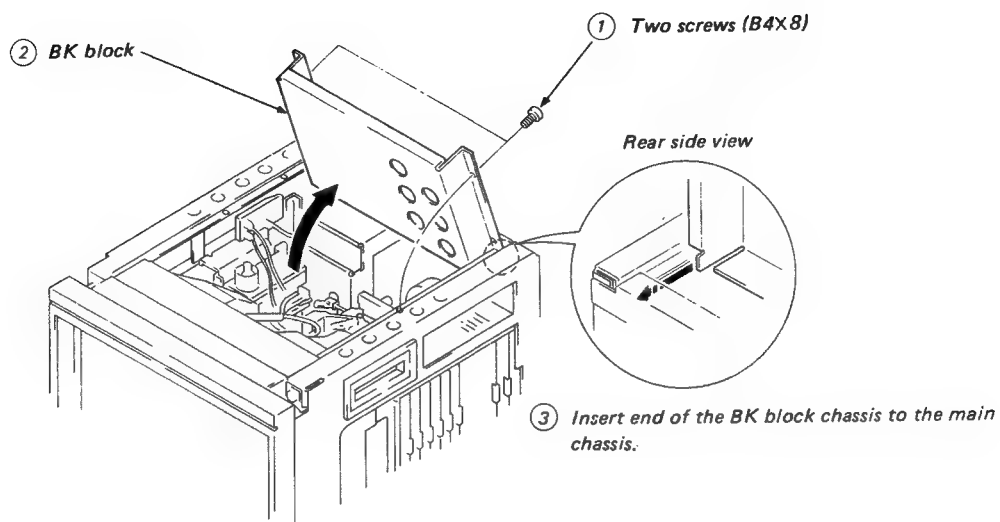
## 2-4. QA, QB, W AND V BOARDS REMOVAL

**Note:** Do it after removing rear cover. (Refer to 2-3, CHECK OF C BOARD)

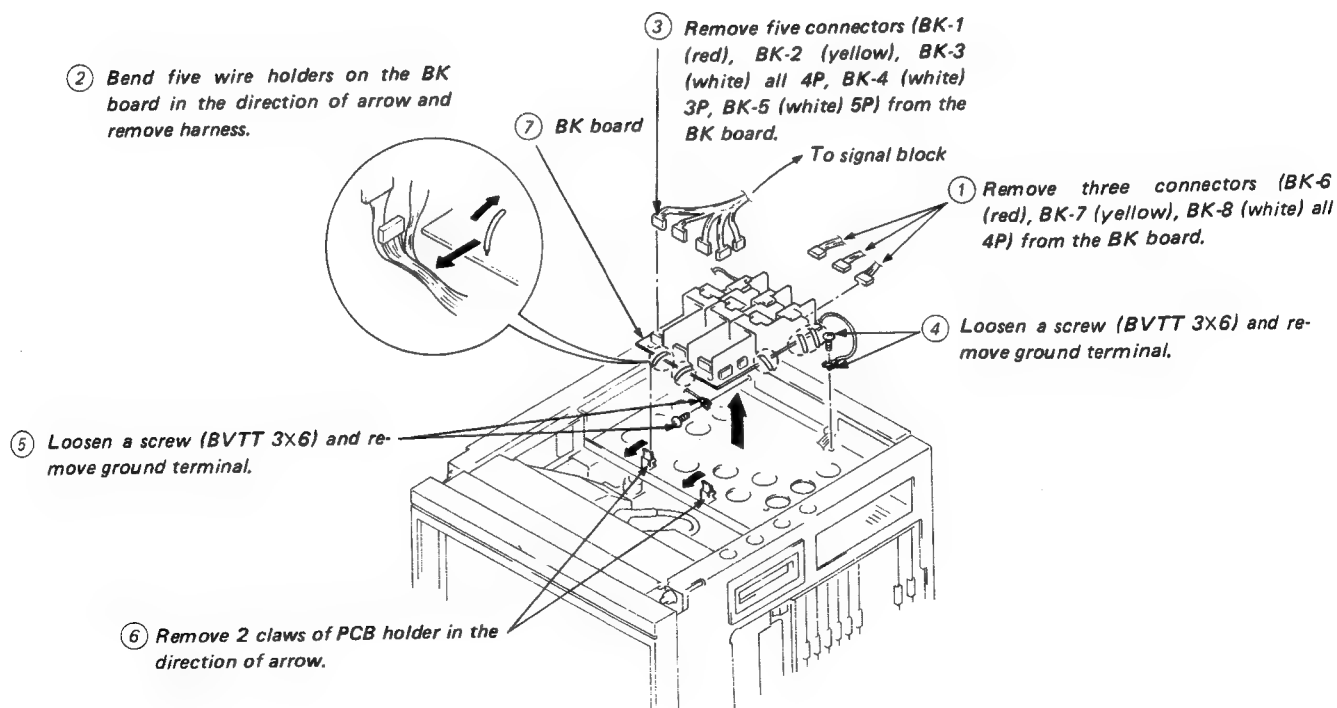




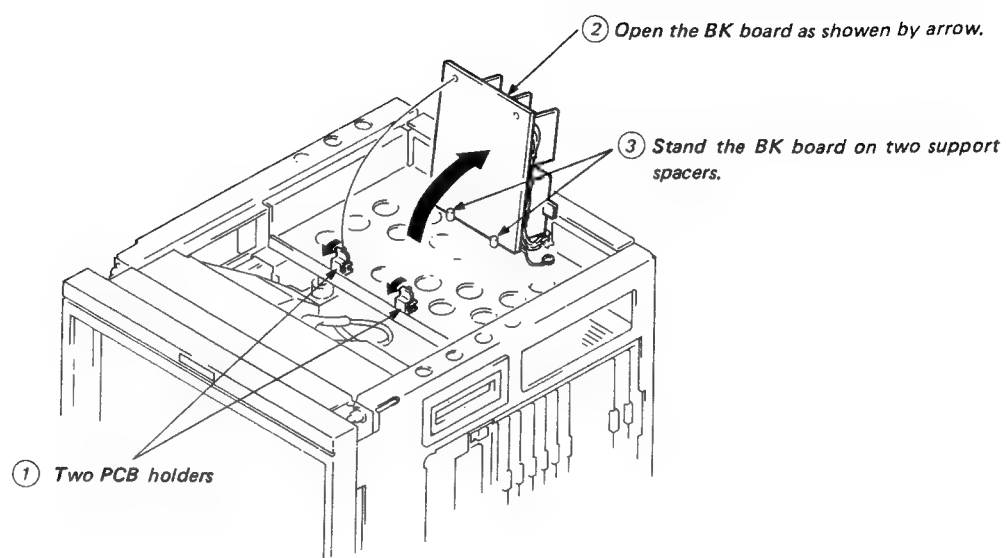
## 2.5. OPEN THE BK BLOCK



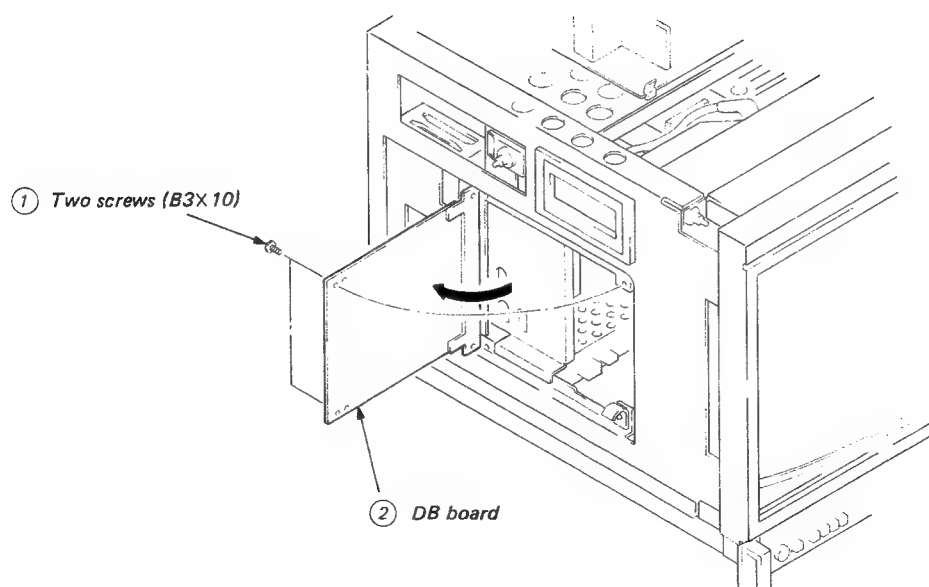
## 2.6. BK BOARD REMOVAL



## 2-7. CHECK OF BK BOARD

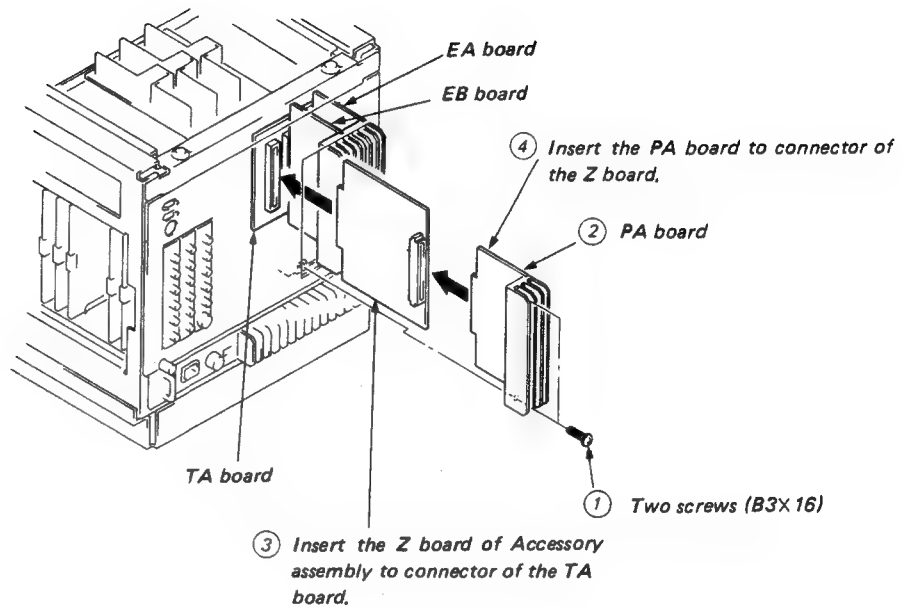


## 2-8. CHECK OF DB BOARD



## 2.9. CHECK OF PA BOARD

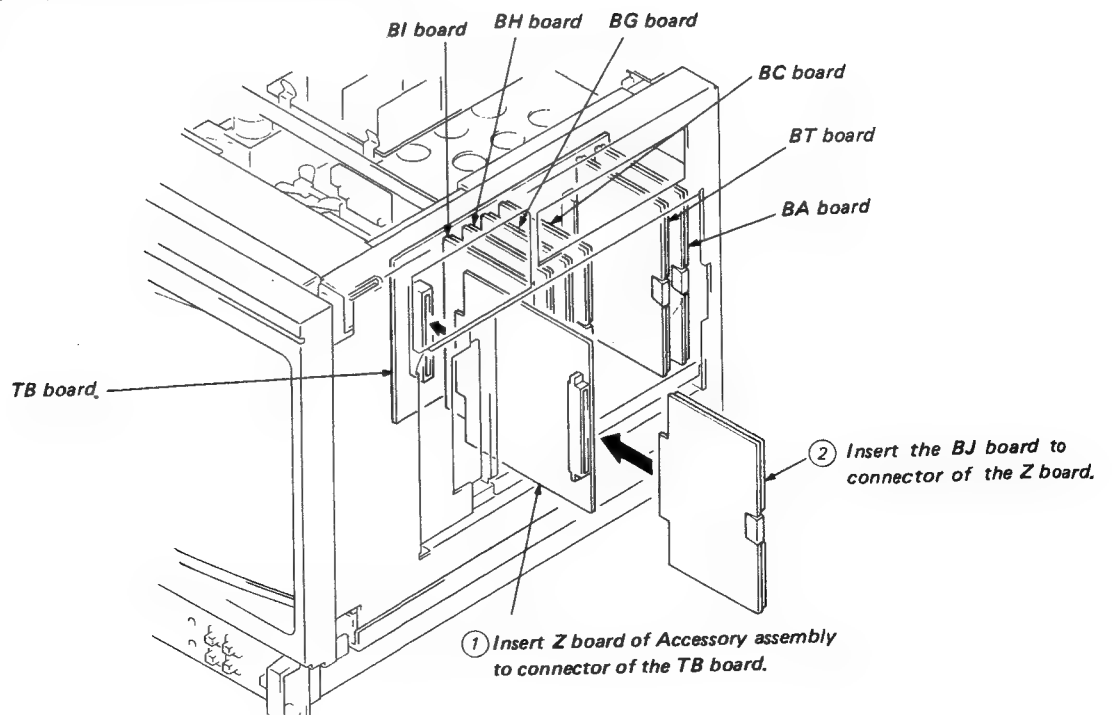
**Note:** EA and EB boards can be checked similarly.



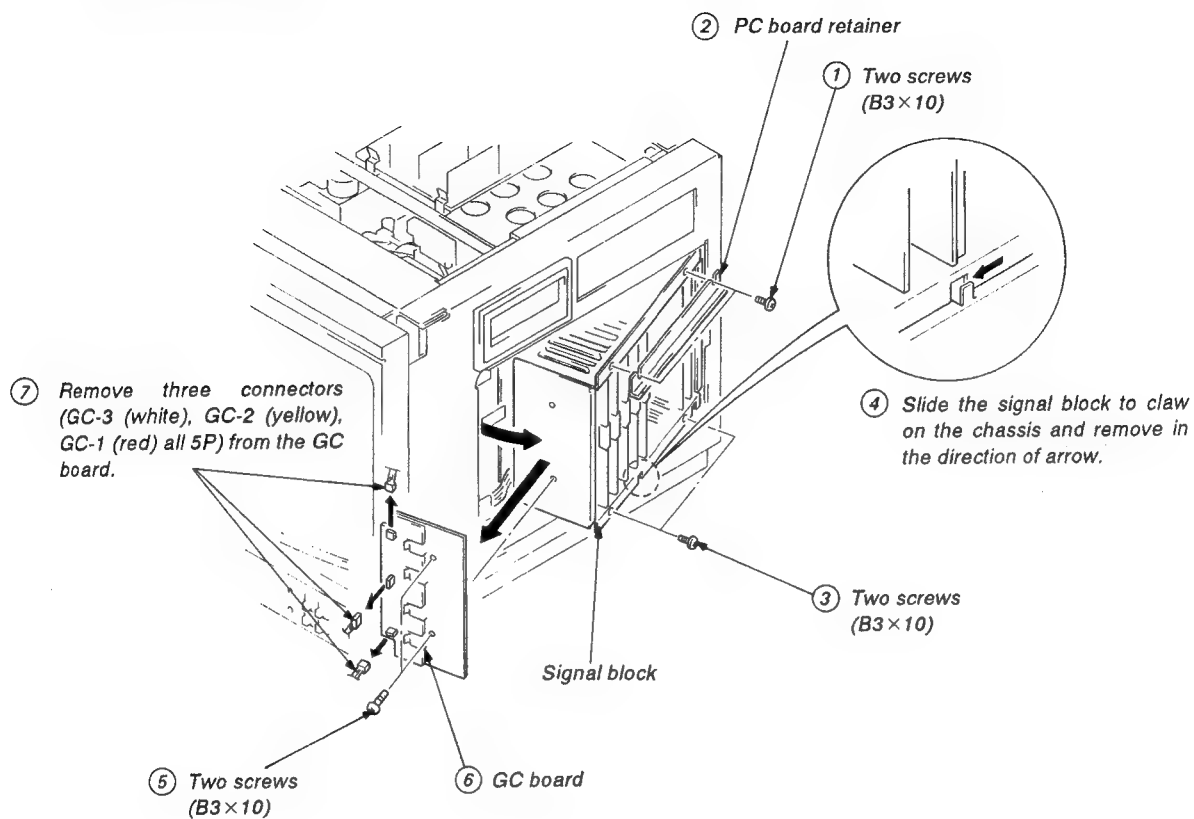
## 2.10. CHECK OF BJ BOARD

**Note:** PC board retainer is attach as anti-detach jig for the board. Remove the PC board retainer before checking.

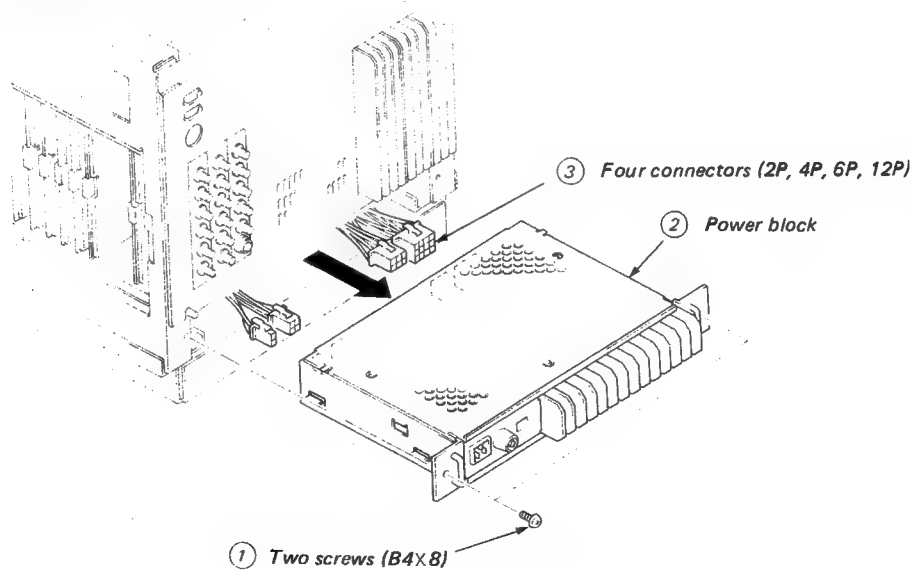
**Note:** BA, BC, BG, BH, BI and BT boards can be checked similarly.



## 2-11. GC BOARD REMOVAL

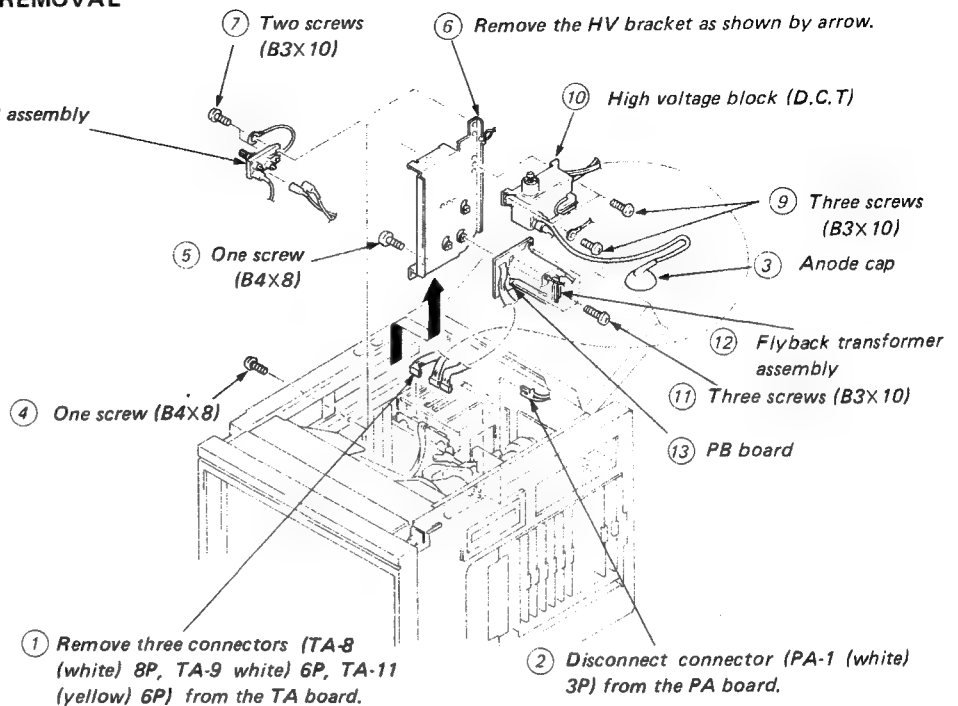
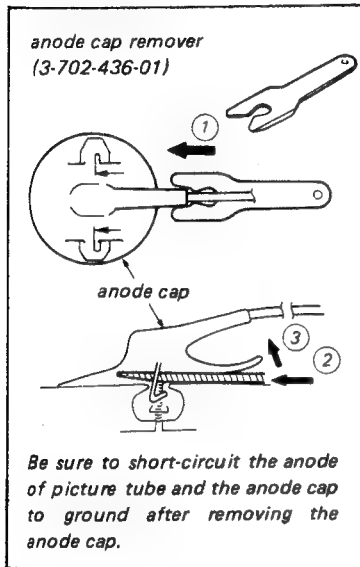


## 2-12. POWER BLOCK ASSEMBLY REMOVAL



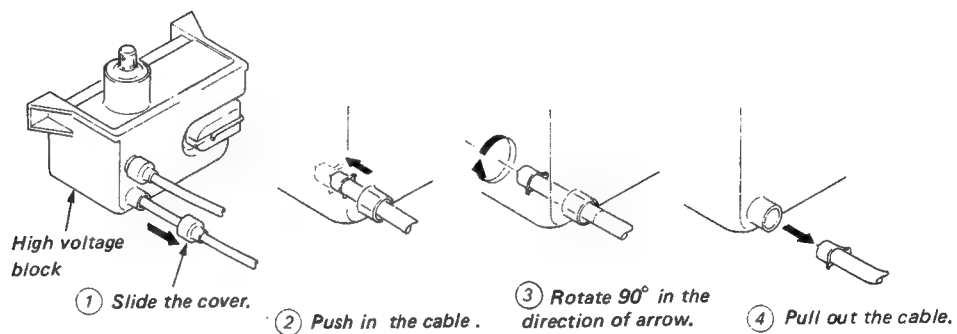
## 2-13. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK REMOVAL

### ● REMOVAL OF ANODE CAP

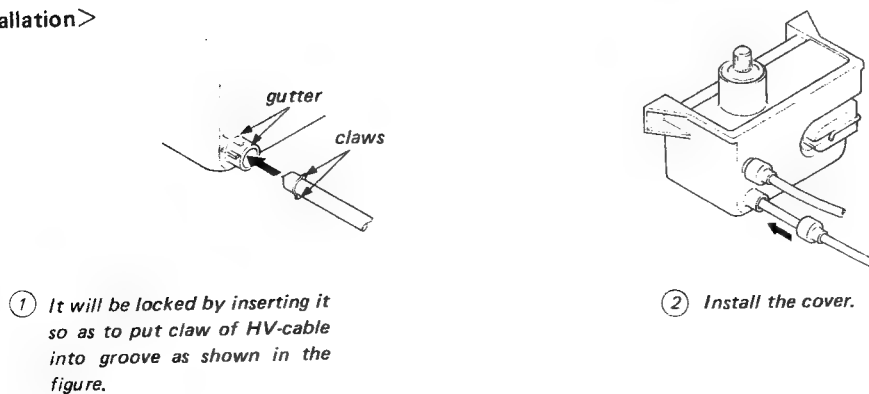


## 2-13-1. REMOVAL AND REPLACEMENT OF HIGH VOLTAGE CABLE

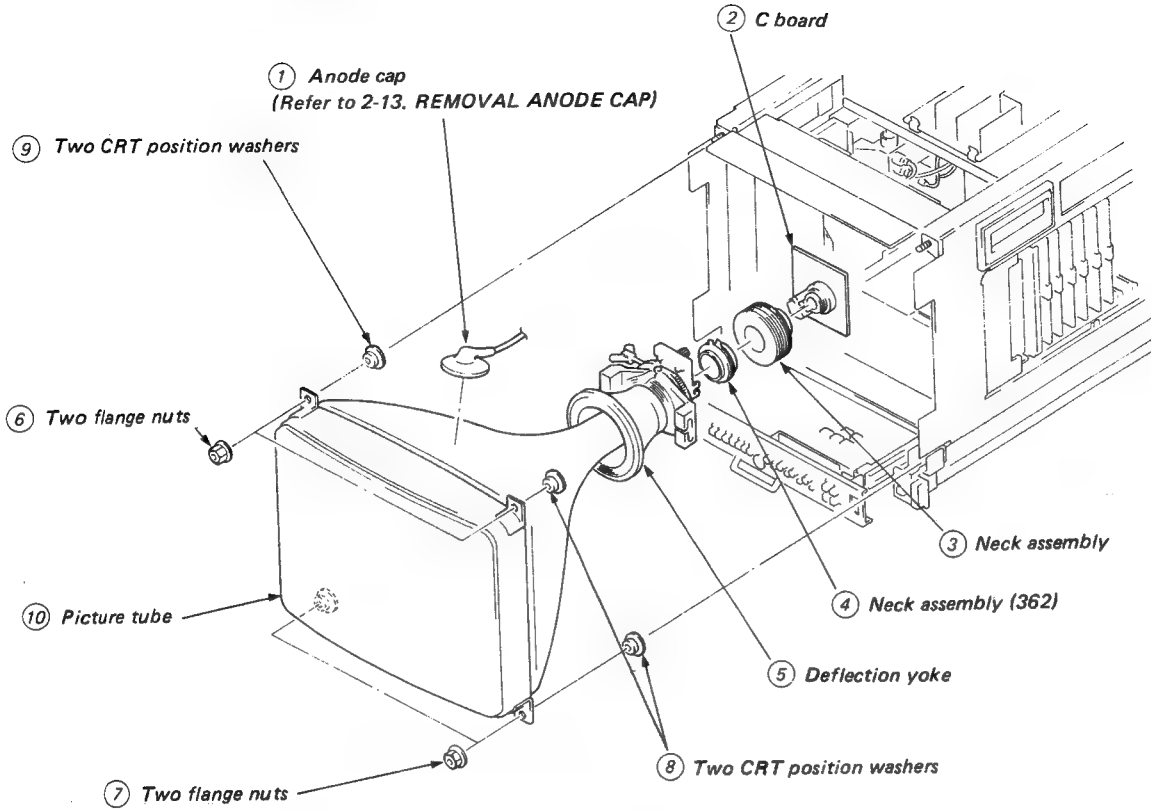
### <Removal>



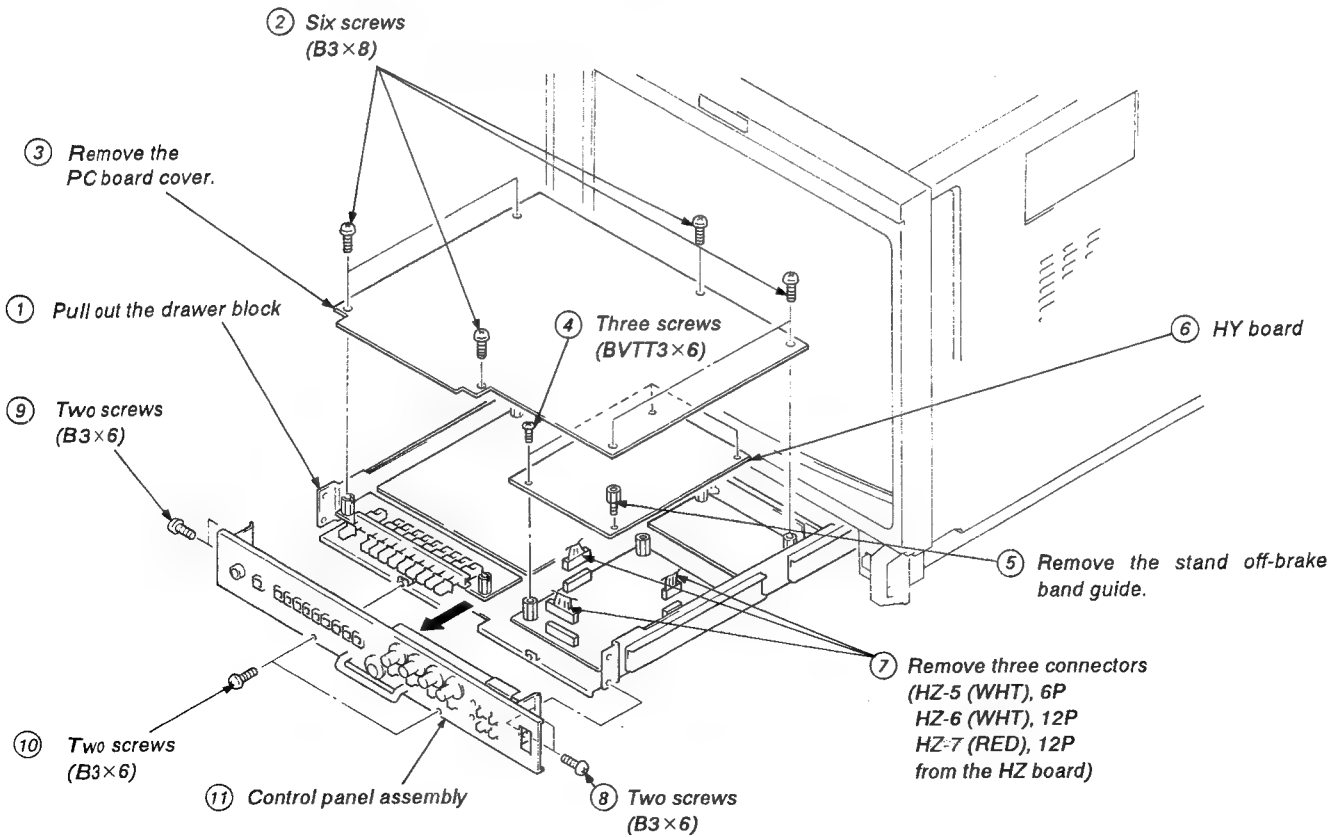
### <Installation>



## 2-14. PICTURE TUBE REMOVAL



## 2-15. CONTROL PANEL ASSEMBLY REMOVAL



## SECTION 3 CIRCUIT DESCRIPTIONS

### 3-1. QA, QB, BA BOARDS

#### 3-1-1. Input Circuit

##### Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed. QB board also has same function.

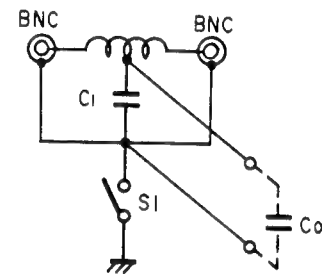


Figure 1

##### Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$$A = \frac{R_c}{R_i} : \text{Gain of amplifier for input A}$$

$$B = -\frac{R_c}{R_i} : \text{Gain of amplifier for input B}$$

When input  $(e_c + e_i)$  is applied to input A and input  $(e_c - e_i)$  to input B, then output  $e_o$  is

$$e_o = \frac{R_c}{R_i} (e_c + e_i) + (-\frac{R_c}{R_i}) (e_c - e_i) = 2 \frac{R_c}{R_i} e_i$$

This equation indicates that  $e_c$  is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

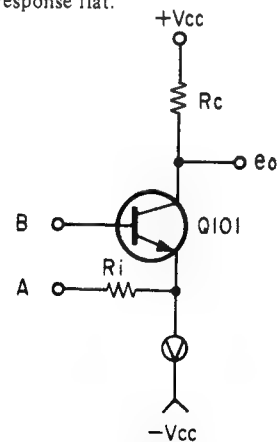


Figure 2

##### Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

#### 3-1-2. Sync AGC Circuit

This circuit is composed of following components: LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit. An inverted composite video signal or composite sync signal ( $e_o$ ) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of  $e_o$  with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of  $e_o$  with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

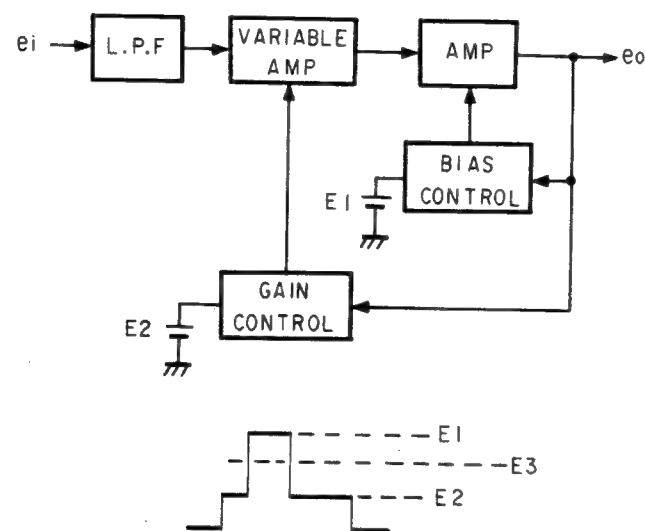


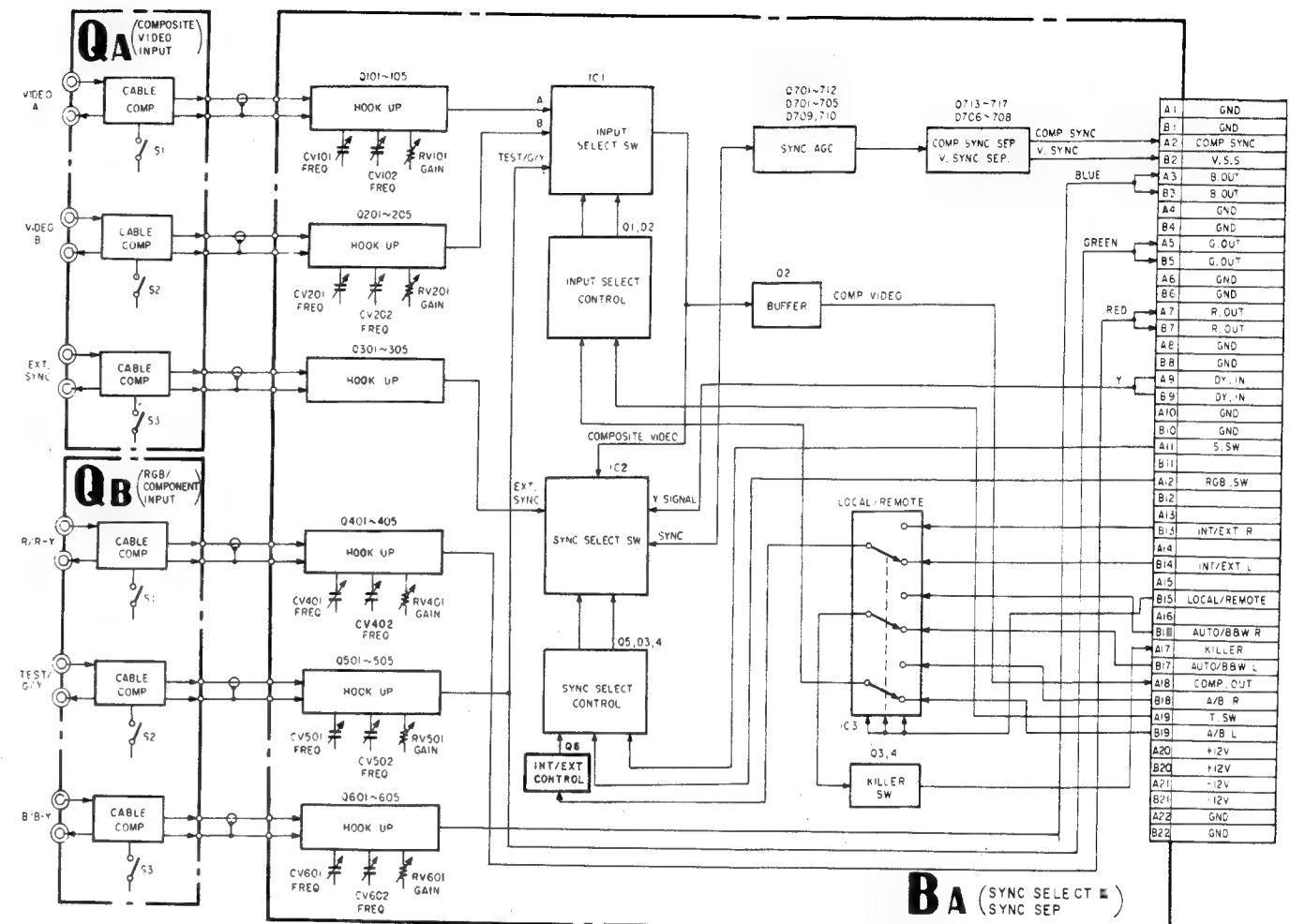
Figure 3

##### Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage  $e_o$  with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

### BLOCK DIAGRAM OF QA, QB, BA BOARDS



### 3-2. BG BOARD

#### 3-2-1. Luminance Signal Circuit

##### Filter SW

IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

##### Aperture Control

Aperture control circuit is composed of DL1(delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal:  $e_{r0}$ ,  
Delayed signal by delay line:  $e_{r1}$   
Second delayed signal:  $e_{r2}$

See Figure 4

$e_1$  (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

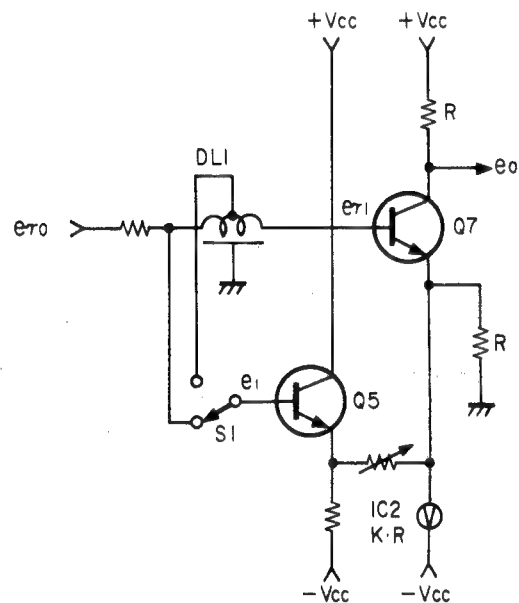


Figure 4

$$e_1 = (e_{r0} + e_{r2})/2$$

Therefore  $e_0$  is

$$e_0 = -\left(e_{r1} + \frac{1}{K} \left(e_{r1} - \frac{1}{2}(e_{r0} + e_{r2})\right)\right)$$

1st term                      2nd term

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied.

Switch S1 is used for selection of boost frequency.

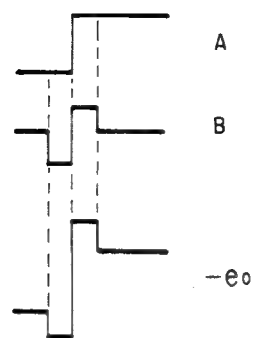


Figure 5

#### Y Delay, Y Buffer Amplifier

Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

#### 3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

##### R-Y Amplifier and Clamping

The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23, Q24 and IC3.

##### R-Y Gain Control Amplifier

This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑧ of IC4.

##### AGC Pulse Generator

Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

##### Gain Control Amplifier for AGC Pulse

Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

##### Color Gain Control

AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and matched by IC7 (1/2) with controlling the above gain control amplifier.

This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

#### 3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

#### 3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

#### 3-2-5. Vector Output Circuit

##### R-Y Vector Output Gain Switcher

Vector output levels are compensated for each color standards, NTSC, PAL and SECAM.

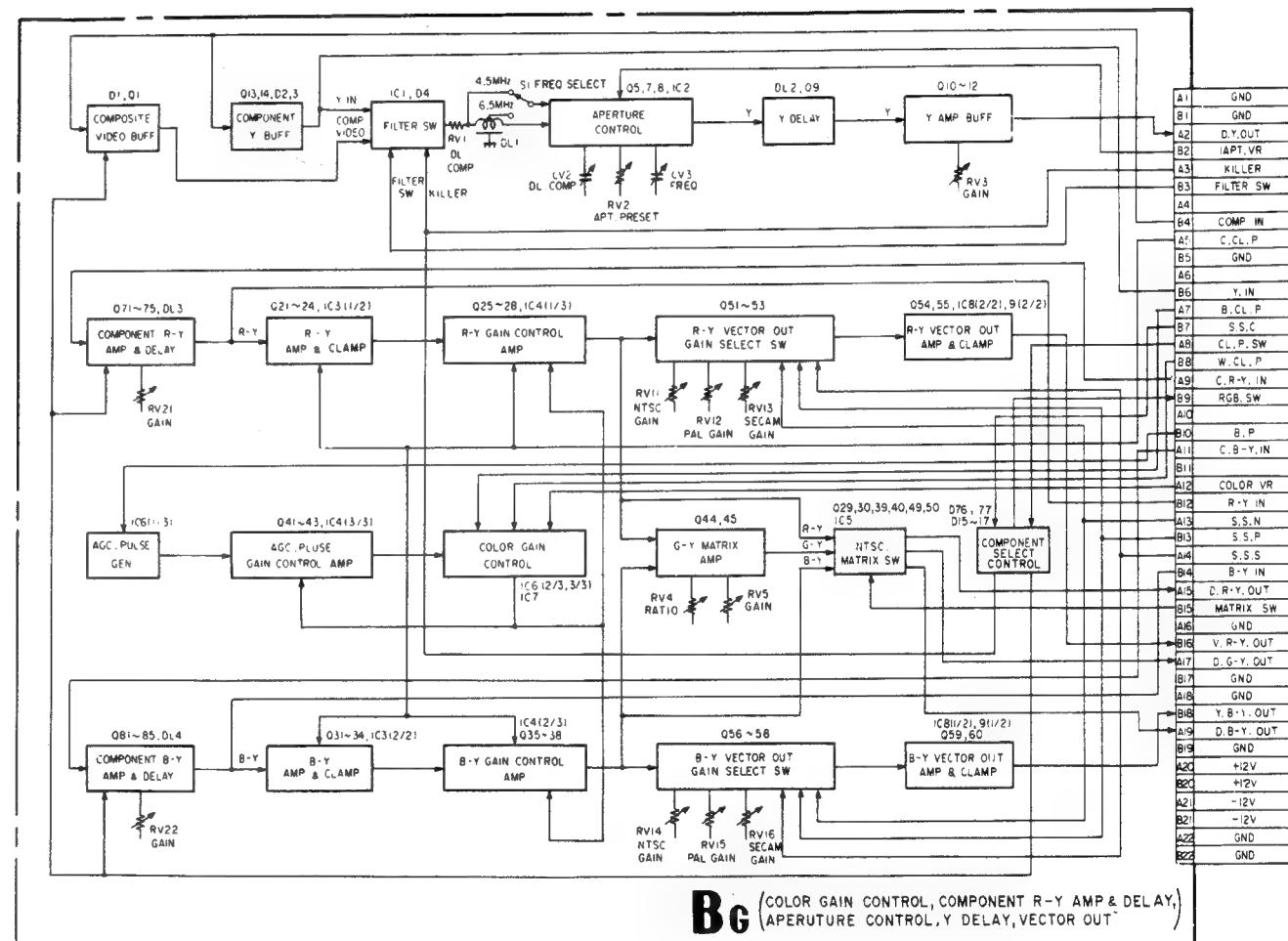
##### R-Y Vector Output Amplifier and Clamping

Vector output signal is amplified by IC9 (2/2) and transistor Q54 and clamped by IC8 and transistor Q55 for the suitable operation.

#### 3-2-6. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, polarity and delay time to match the R-Y signal of decoder output.

### BLOCK DIAGRAM OF BG BOARD





### 3-3. BH BOARD

#### 3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

##### Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

##### Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

##### Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal. For color difference signals screening is made at the Horizontal Sync portion.

##### Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal for contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

#### 3-3-2. Contrast Control, Brightness Control, Peak Limiter

##### Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin ④ of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

##### Red limiter (Same as Green and Blue)

When excess input signal comes in, amplitude is limited by the limiter composed of transistors Q104 and Q105.

##### Red Contrast Control

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108.

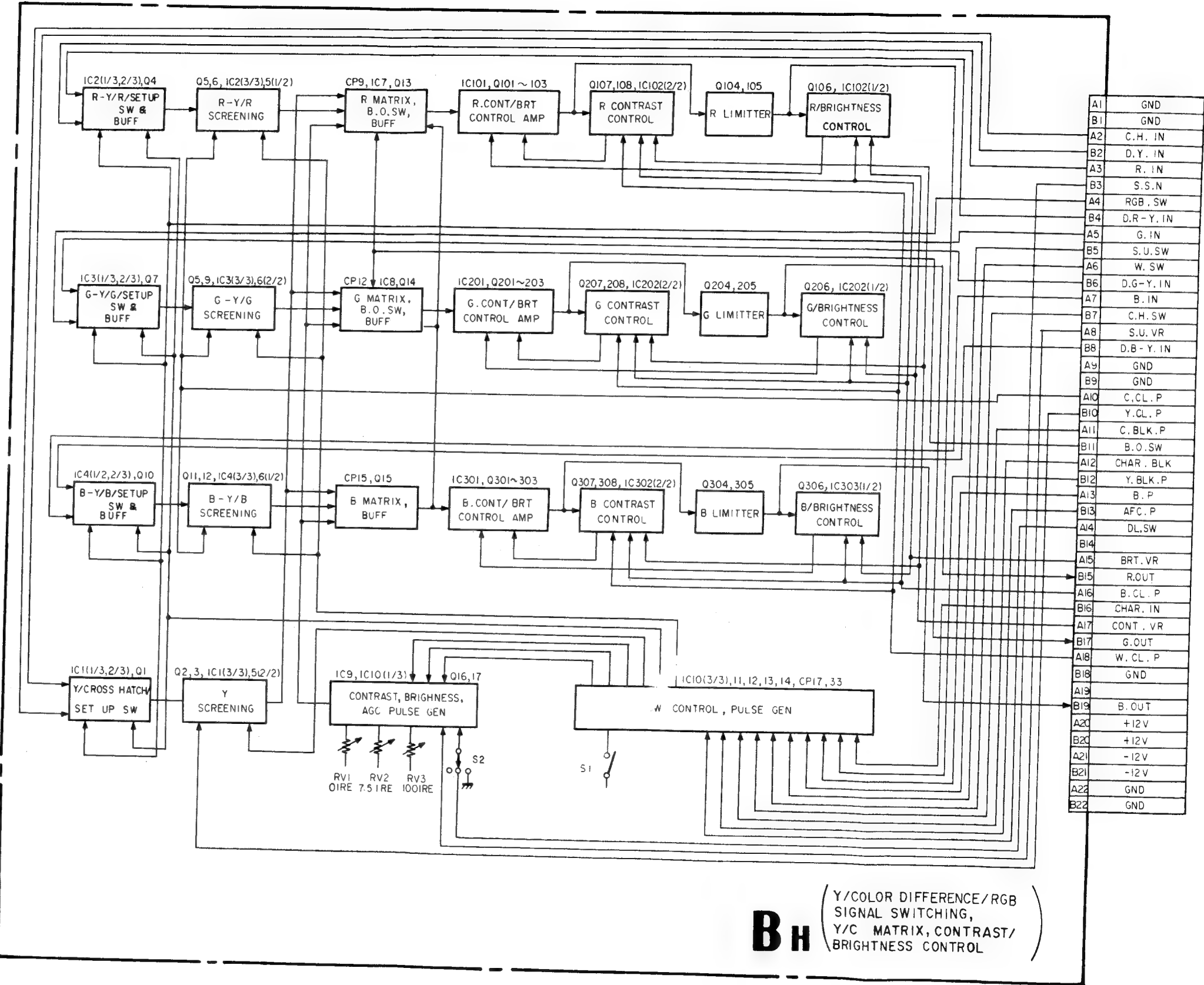
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

##### Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD



### 3-4. BI BOARD

#### 3-4-1. Red Screen SW, AGC Pulse Insertion (Same as Green and Blue)

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

#### 3-4-2. Red Limitter, Gain Bias Control Amplifier

This limiter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier (See section of BH board)

#### 3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.

(This time, black level of VIDEO OUTPUT will be -90V DC.)

RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin ③ of IC403.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

#### 3-4-4. Red Cathode Current Detection, Red G1 Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit.

#### 3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

#### 3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.

The signal for G1 BIAS control is fed to base of the transistor Q11 from RED G1 BIAS control circuit. (Same as G and B)

Only one of the highest voltages among the base voltages of transistors Q11-Q13 is turned on and is compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q105 located in PA board so that Transistor Q105 in PA board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of transistor Q14 (reference voltage) is set so that the voltage of Black level at G1 electrode may be -120V DC and maintain Ekco (cut off voltage) -120V constant.

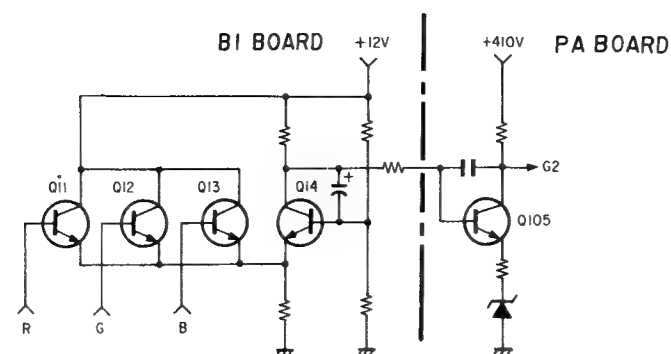
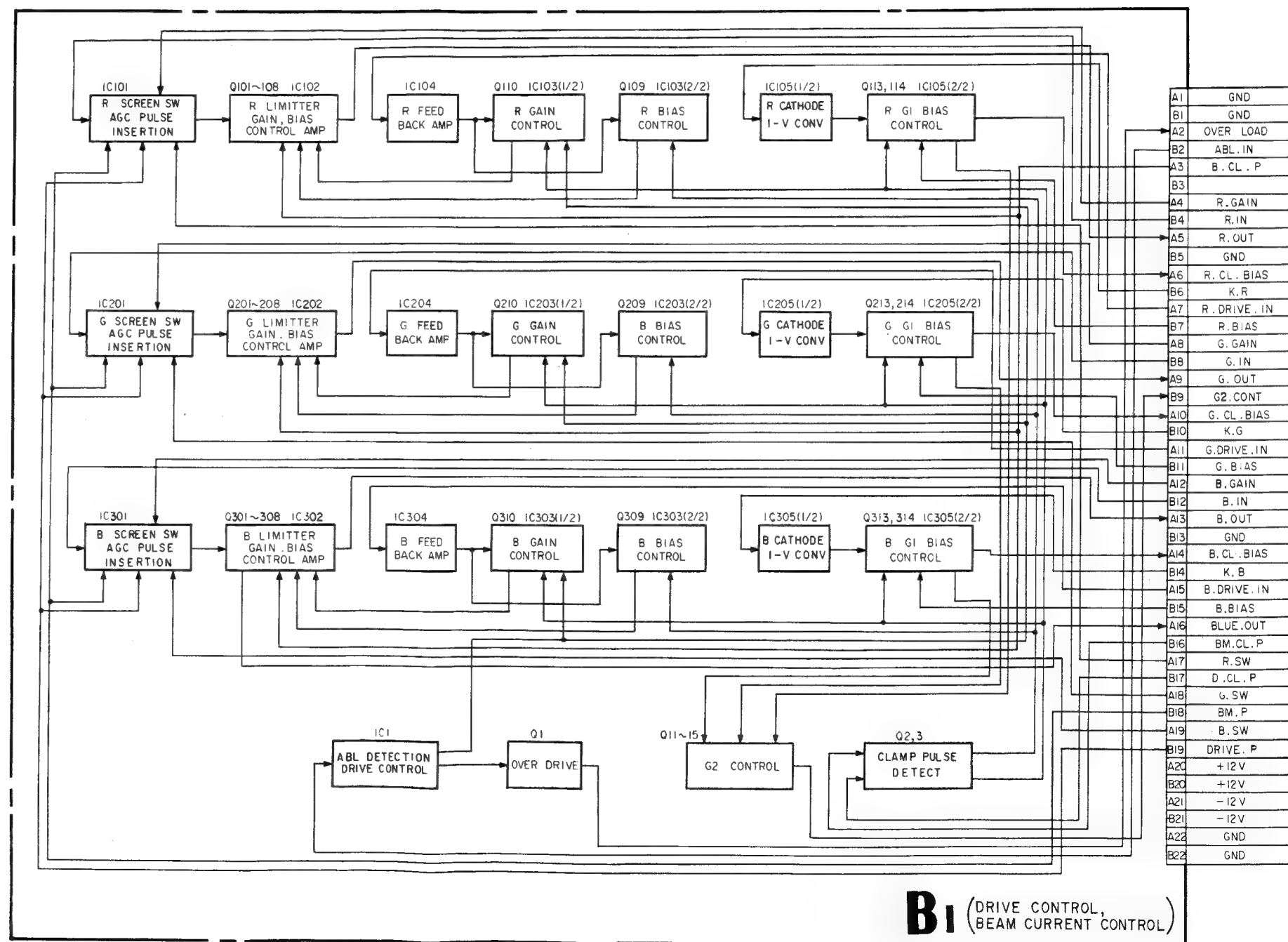


Figure 6

### BLOCK DIAGRAM OF BI BOARD



### 3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

#### 3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.

Also H sync which has constant pulse width is made from 1H sync.

#### 3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

#### 3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.

When there is no incoming signal, trigger pulse is generated by vertical counter (384H).

When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.

Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

#### 3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.

And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

#### 3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.

The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.

And flyback pulse is counted down to generate horizontal lines.

#### 3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

#### 3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

#### 3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

#### 3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W. CL.P) are generated here.

#### 3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.

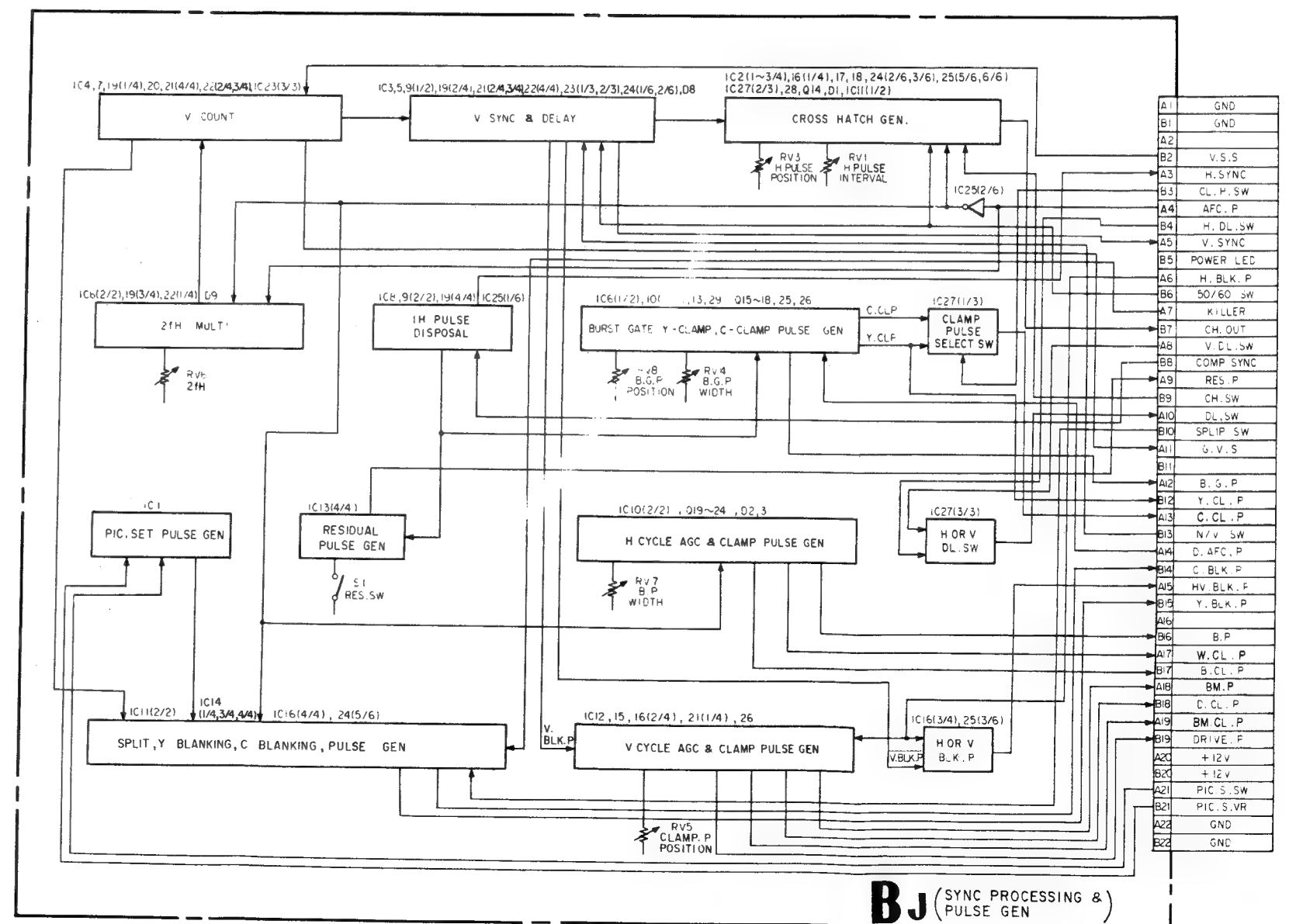
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.

Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

#### 3-5-11. Others

Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P. or Y.CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD



TIMING CHART OF MAJOR PULSE (BJ BOARD)

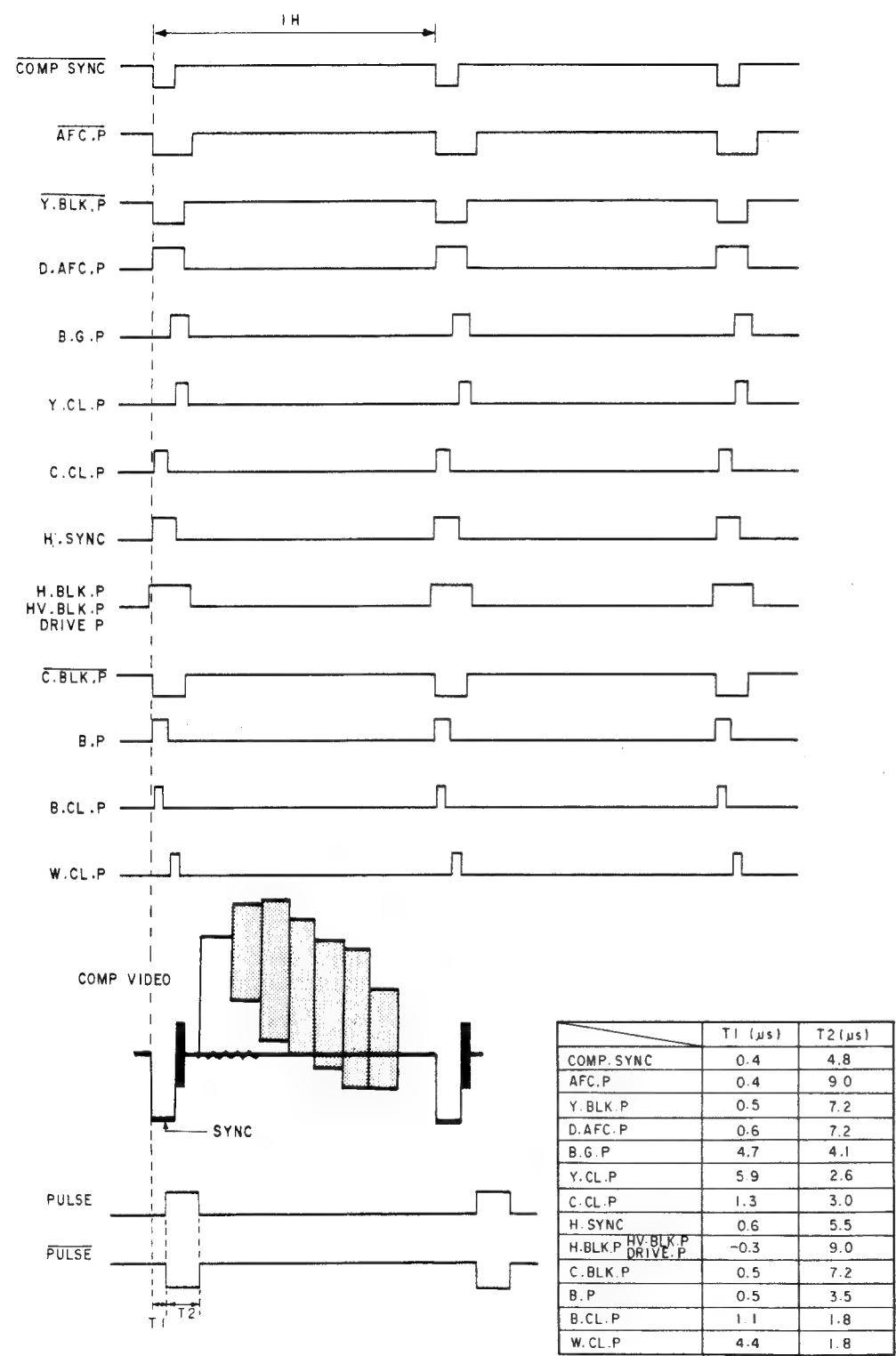


Figure 7

FIELD 1 VERTICAL BLANKING

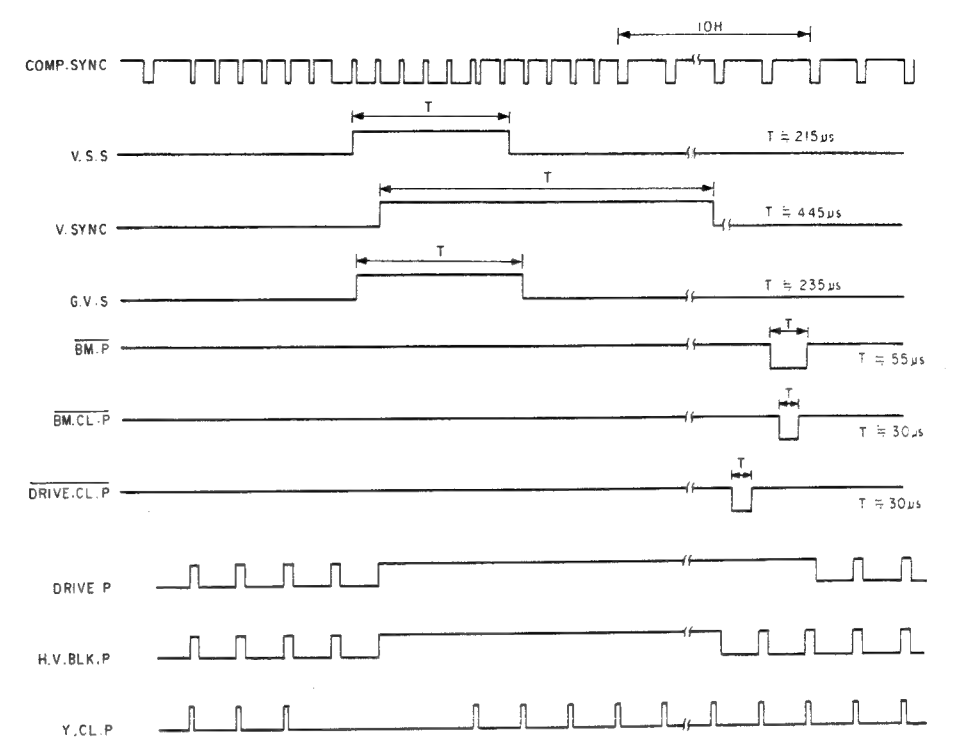


Figure 8

FIELD 2 VERTICAL BLANKING

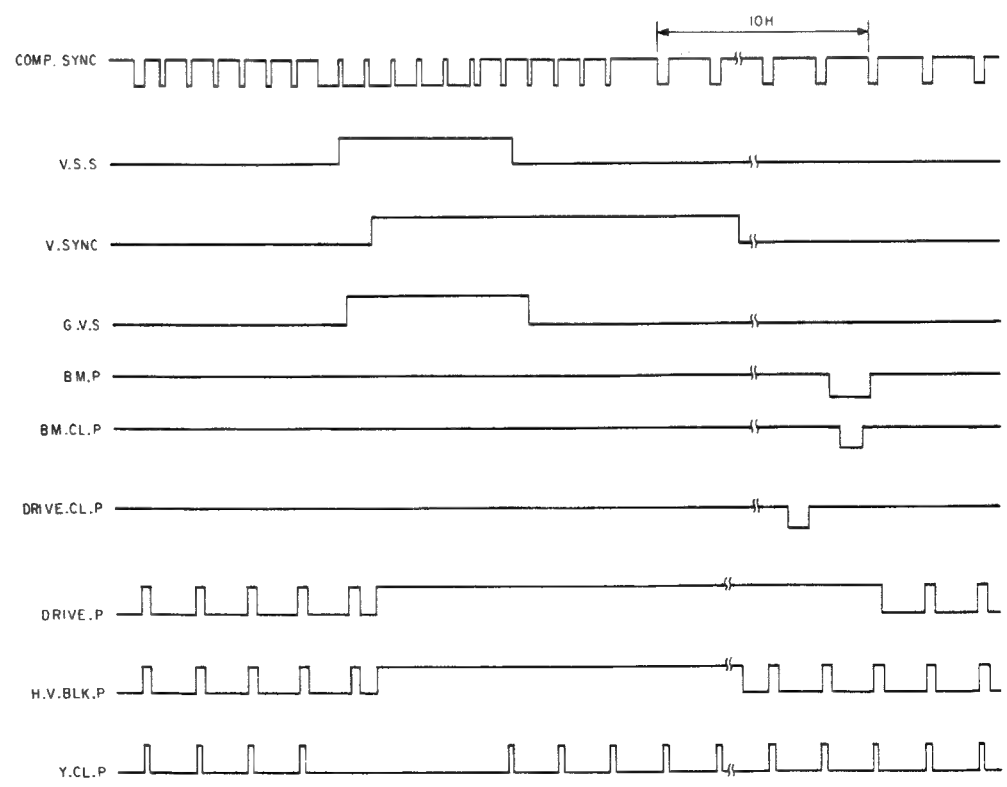


Figure 9

3-6. BK BOARD

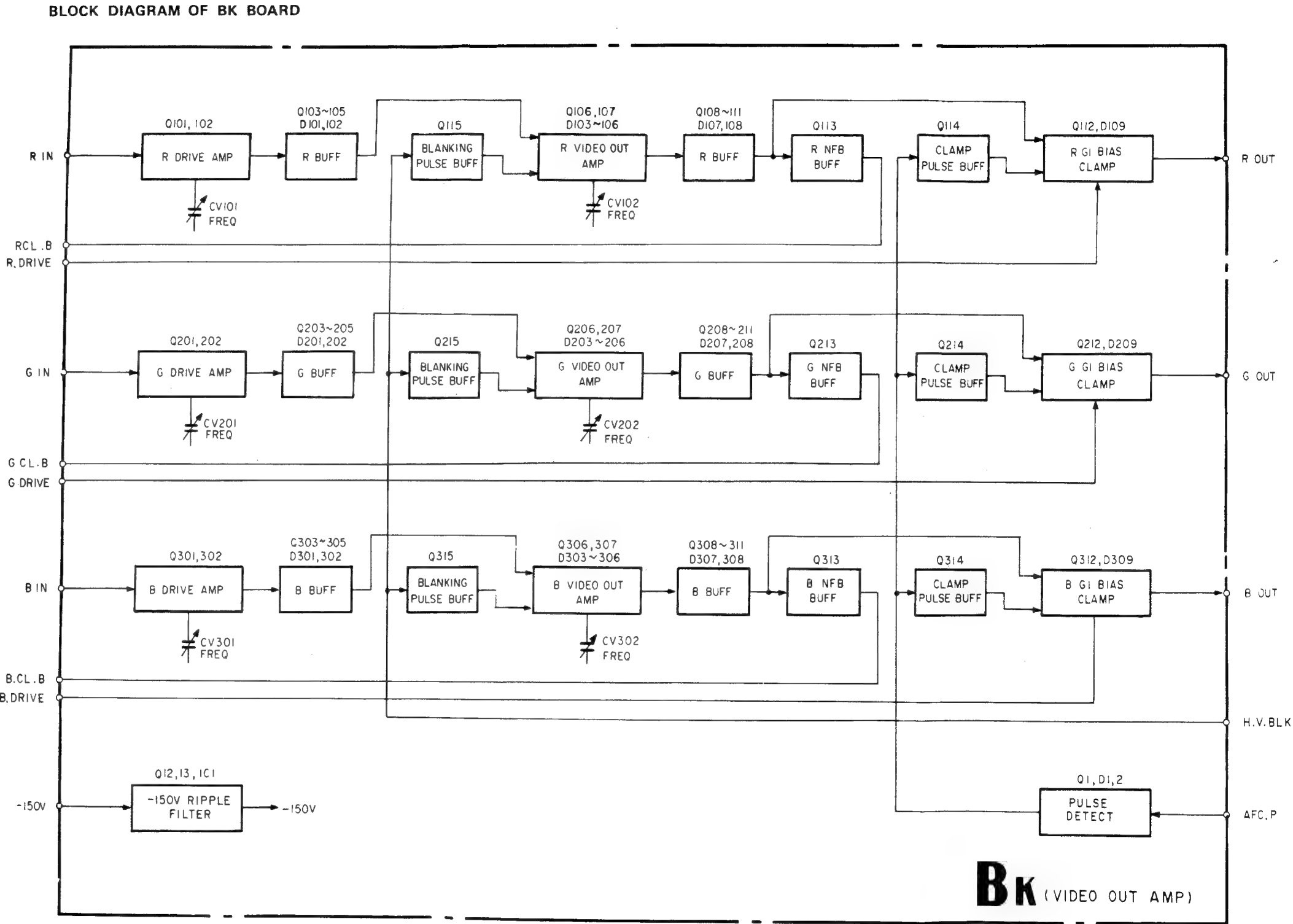
Following are described about Red channel. Green and Blue channel are the same.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive G1 of CRT.  
Gain is approx. 14  
Also in this amplifier, BLANKING pulse is mixed with video signal.



### 3-7. BEAM CONTROL CIRCUIT (BI, BK BOARDS) (Same as Green and Blue)

Block diagram is shown in Figure 10.

#### 3-7-1. Detection of Cathode Current and I-V Conversion (BI BOARD)

Cathode current is detected as a voltage by using IC105 (1/2)

#### 3-7-2. Red G1 Bias Control (BI BOARD)

BMP is inserted in the signal during vertical blanking in BI board.  
This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113.

This bias control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

#### 3-7-3. Red G1 Bias Clamp Circuit (BK BOARD)

Video output signal is clamped at the voltage of collector of transistor Q114 in BI board by using transistor Q112.

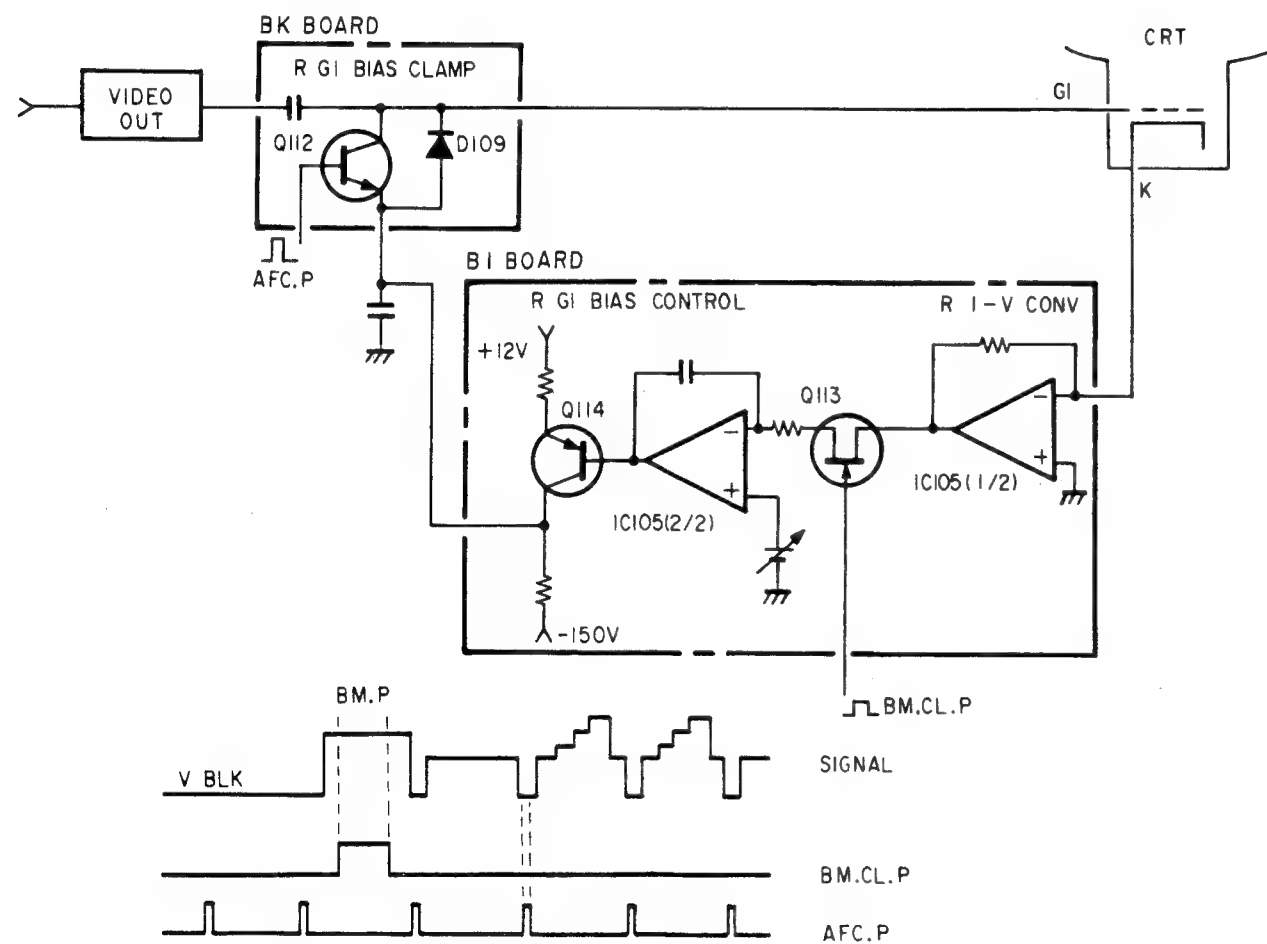


Figure 10

(BVM-1911 ONLY)  
3-8. NTSC COMB FILTER (BT BOARD)

3-8-1. 3 Line Dynamic Comb Filter (Fig. A)

The fed video signal is band limited by a low-pass filter. (This signal is hereinafter referred to as the OH signal.) The OH signal becomes the signal which is 1H (63.556  $\mu$ sec) delayed by the 1H delay circuit (1H delayed signal) and the signal which is 1H further delayed by the 1H delay circuit (2H delayed signal). The OH, 1H, and 2H signals are band limited by the respective band-pass filters (center frequency: fs) for delay of  $\lambda/2$  (140 nsec). The 1H signal is further  $\lambda/2$  delayed. The OH+ $\lambda/2$ , 1H, 1H+ $\lambda/2$ , 1H+ $\lambda$  and 2H+ $\lambda/2$  (A, B, C, D and E of the block diagram) at each point are separated into chroma signals only by the correlation circuit (IC501). The luminance signal is separated with the chroma signal subtracted from the 1H signal.

3-8-2. 2 Line Simple Comb Filter

The chroma signal is separated with the OH+ $\lambda/2$  and 1H+ $\lambda/2$  signal subtracted, and the luminance signal is separated by subtracting the chroma signal from the OH signal.

3-8-3. 1H Delay Circuit (Fig. B)

The 1H delay circuit consists of two CCD delay lines. These CCD delay lines are used in parallel to attain 1H (63.556  $\mu$ sec) signal delay.

3-8-4. Band-pass Filter (Fig. C)

The band-pass filter consists of a delay line. It performs band limiting with the group delay kept constant.

3-8-5. Correlation Circuit (IC501) (Fig. D)

The correlation circuit consists of a limiter circuit which is common to emitters to perform separation of a chroma signal.

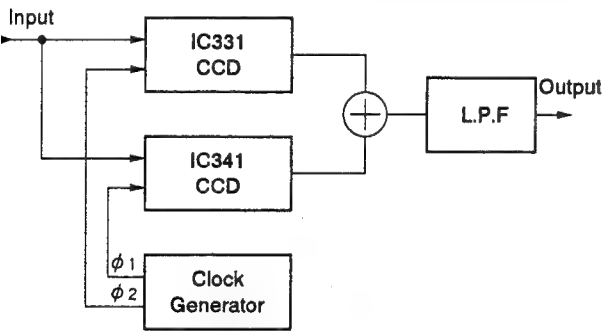


Figure B

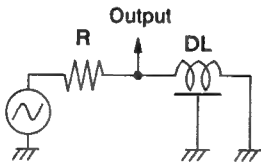


Figure C

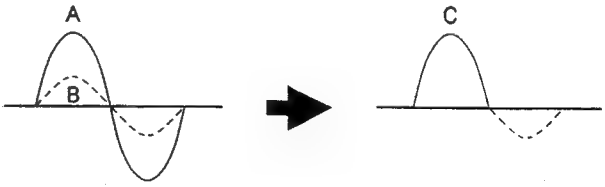
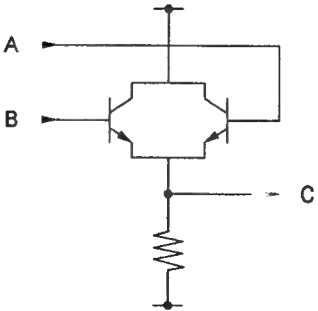


Figure D

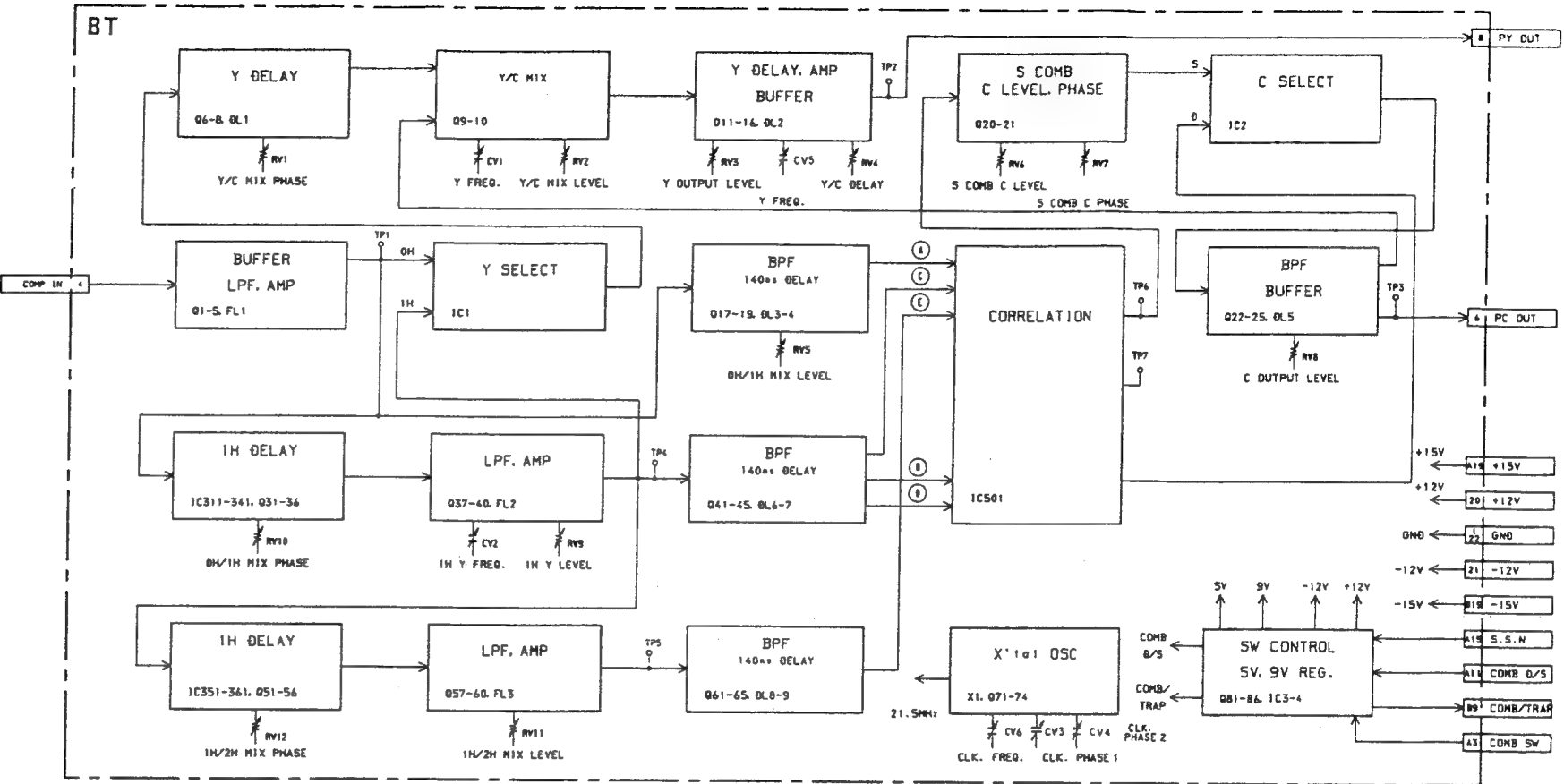


Figure A

(BVM-2011P ONLY)

### 3-9. PAL DEMODULATOR, Y TRAP CIRCUIT (BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

#### 3-9-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5. The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derived from Q5.

#### 3-9-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2. When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period. When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate. When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

#### 3-9-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin ④) is fed to chroma amplifier circuit (Q19, Q36). After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin (3)) and B-Y input terminal (IC1, pin (2)) of the following demodulator circuit via the buffer (Q38).

#### 3-9-4. Phasa Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12). In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal. Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor. When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal. When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin ④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit. As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

#### 3-9-5. PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure E. This IC is designed for use of NTSC demodulator. When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ⑬ and pin ⑭. The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°. Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 4.433619 MHz. Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit. The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.

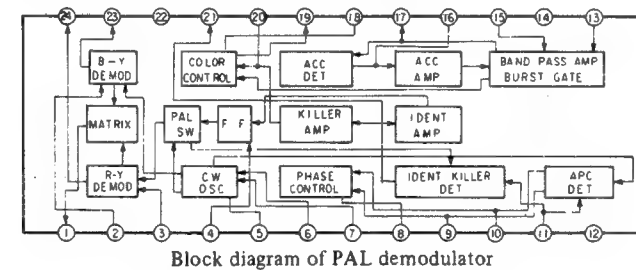


Figure E

#### 3-9-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained. R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF). The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑤ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF). The signals input to Q20 are formed by IC7 and Q18. Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9. IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit. The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2. The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑤ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

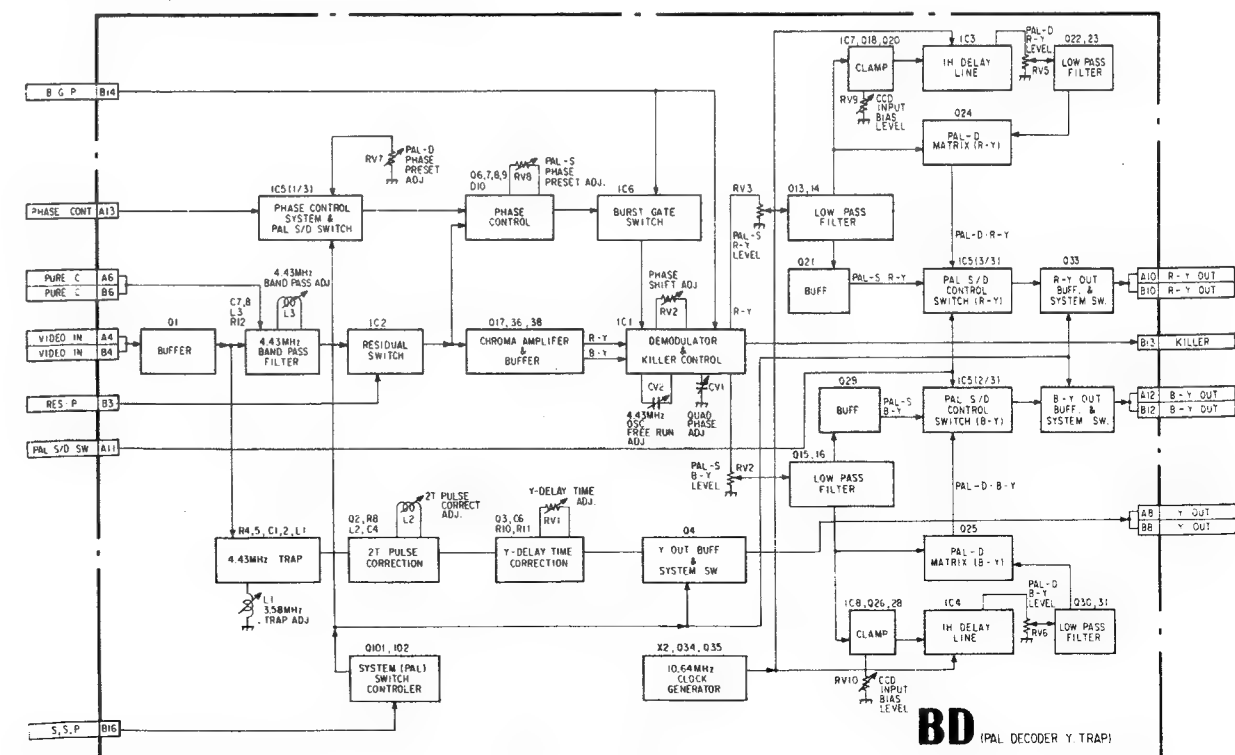
#### 3-9-7. 4.43 MHz Trap Circuit, Phasa Compensation, Y Delay Conrection Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1. Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency. Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4) This circuit compensates phase delay of the signal at high frequency due to the trap circuit. Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

#### 3-9-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

#### BLOCK DIAGRAM OF BD (PAL) BOARD





(BVM-1911 ONLY)

### 3-10. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

The composite video signal (NTSC) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58MHz trap circuit with Y signal and to band pass filter with chrominance signal.

#### 3-10-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R18, capacitor C7, C8, inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (3.58MHz) by L3, and chrominance signal is derived from Q5.

This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor Q103 and Q104 activates and base voltage of Q5 goes down to -12V and Q15 is cut off and then chrominance signal (Pure C) is provided from comb filter circuit to IC2.

#### 3-10-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2 (Pin 7).

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin 3) of IC2 and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

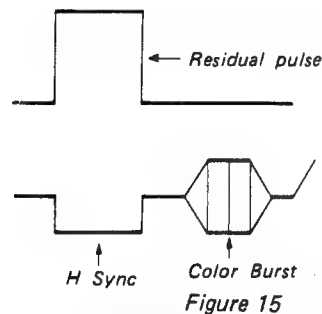


Figure 15

#### 3-10-3. Chroma Amplifier Circuit

The level of chrominance signal from residual switch circuit (IC2 pin 4) is divided by resistor R85 and R86 and is fed to chroma amplifier circuit (Q6, Q7, Q8).

The gain of this amplifier is almost 1 and this amplifier has 2 outputs. They are non-inverted signal and inverted signal.

Non-inverted signal is fed to R-Y input terminal (IC1 pin 3) of demodulator and inverted signal to B-Y input terminal (IC1 pin 2).

#### 3-10-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q9, Q10, Q11, Q12, D2).

In this circuit, a variable capacitance diode (D2) is used to control the phase of color burst signal.

Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D2 via analog switcher (IC2 Pin 3). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.

Analog switcher IC3 (2/3) activates to make short-circuit between input terminal pin 13 and output terminal pin 14, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to NTSC and otherwise pin 13 kept open circuit.

As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC3 (1/3). The gated burst signal is fed to the burst input terminal pin 11 of demodulator IC1.

#### 3-10-5. NTSC Demodulator

Block diagram of IC1 used for NTSC demodulator is shown in Figure 16.

This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin 1 and pin 2, color burst signal to pin 11 and Burst Gate Pulse (B.G.P.) to pin 13, R-Y and B-Y color difference signals are obtained at output terminals pin 23 and pin 24.

The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.

Local oscillator (3.58MHz) is formed by CW oscillator in IC1 connected to the terminal pin 5, 6, 7, 8 and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 3.579545MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin 9 and 10 local oscillator is controlled by APC circuit.

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.

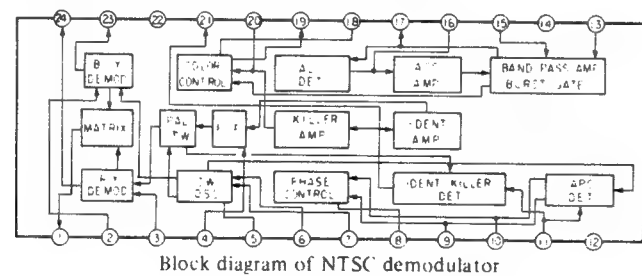


Figure 16

#### 3-10-6. 3.58 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from emitter of transistor Q1 is fed to 3.58MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1.

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

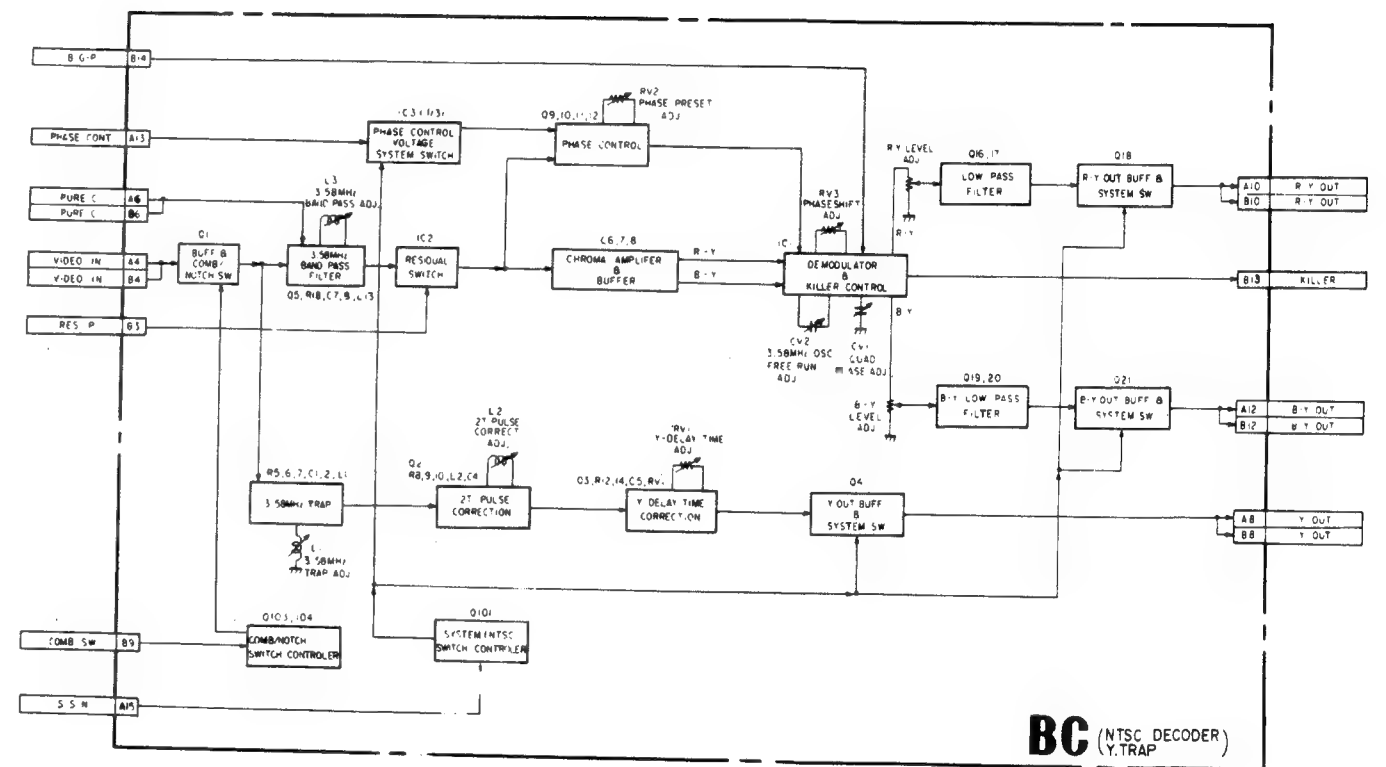
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

#### 3-10-7. Color Standard Selector

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.

#### BLOCK DIAGRAM OF BC BOARD



BC (NTSC DECODER)  
Y-TRAP

### 3-11. VERTICAL DEFLECTION OUTPUT CIRCUIT CONVERGENCE OUTPUT CIRCUIT (EB BOARD)

#### 3-11-1. Vertical Deflection Output

Vertical Deflection Output amplifier is composed of DC coupled SEPP (single Ended Push Pull) amplifier (Q1~Q5) and boost up circuit.

This boost up circuit contains transistors Q7 and Q8 to reduce power consumption by applying the voltage to the output transistor during vertical retrace time.

Both vertical rate sawtooth waveform and correction waveform for top and bottom pincushion are generated in DA board and fed to output amplifier. Vertical centering is performed by changing DC level of vertical rate sawtooth because Vertical DY (Deflection Yoke) is connected to output amplifier directly.

#### 3-11-2. Convergence Yoke Output Circuit

CY (Convergence Yoke) is used for adjustment of misconvergence of vertical direction. This CY is driven by SEPP (single ended push pull) amplifier (Q9~Q13) and connected directly. Correction waveform is provided from DB board.

### 3-11-3. DCT (Dynamic Convergence Transformer) Output Circuit

This circuit is used for adjustment of misconvergence for Horizontal direction.

DCT is also driven by SEPP amplifier (Q14~Q19) and AC coupled to it.

Correction waveform is provided to the primary of DCT and transferred to the secondary windings, output voltage of secondary windings is applied to CV electrode of CRT (picture tube) and performed convergence adjustment.

circuit diagram shown in Figure 17 is the theory of basic DCT circuit.

### BLOCK DIAGRAM OF EB BOARD

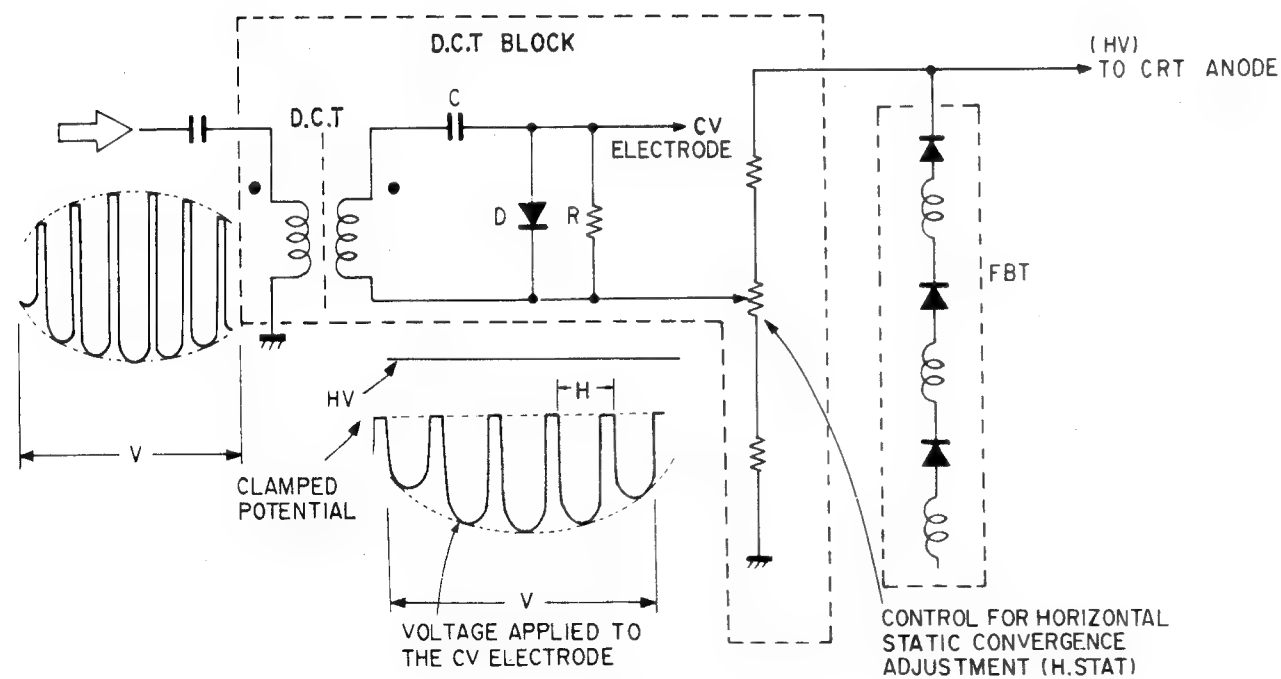
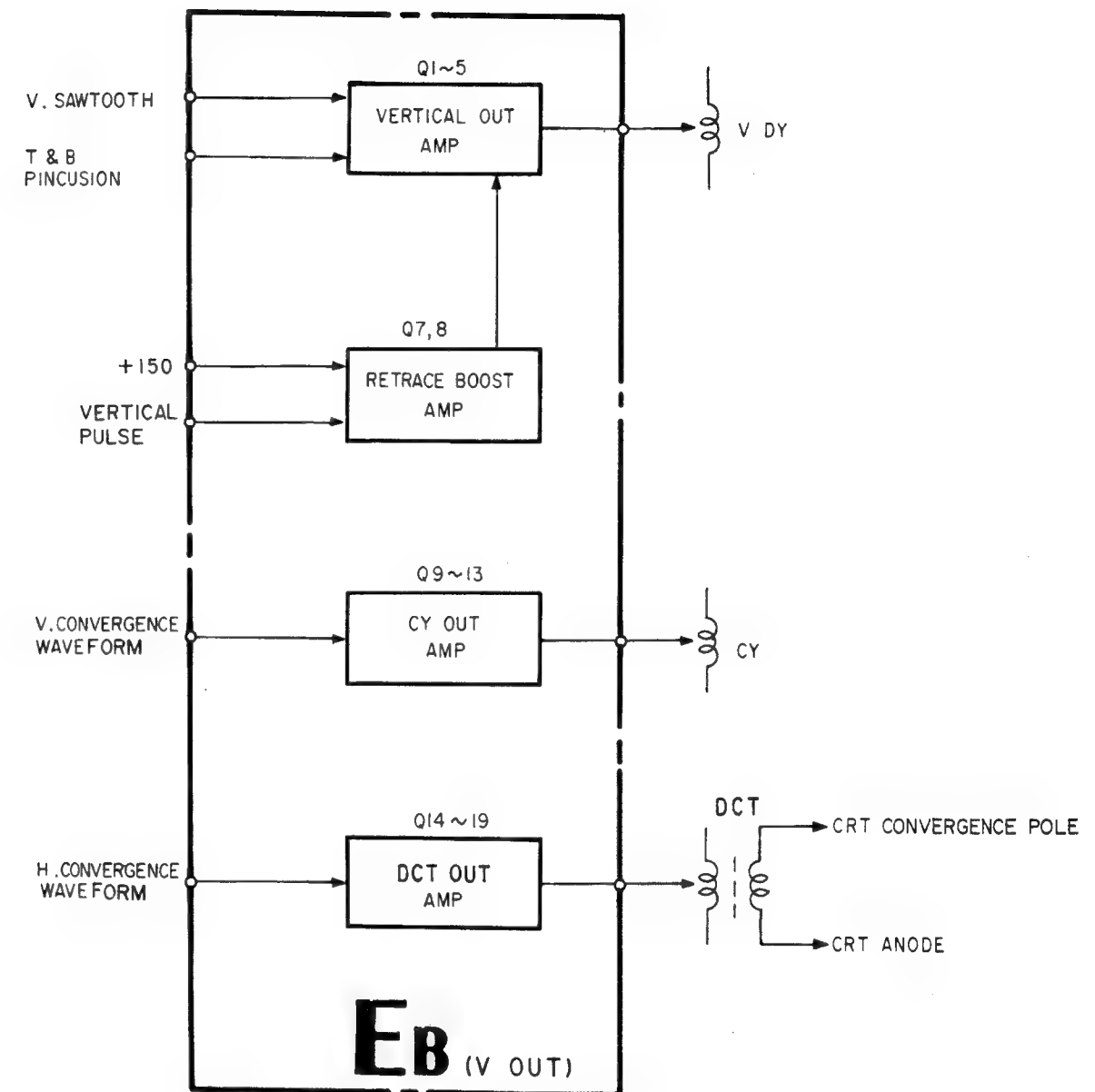


Figure 17

### 3-12. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

#### 3-12-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V). In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier. See Figure 18(a). In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier. See Figure 18(b).

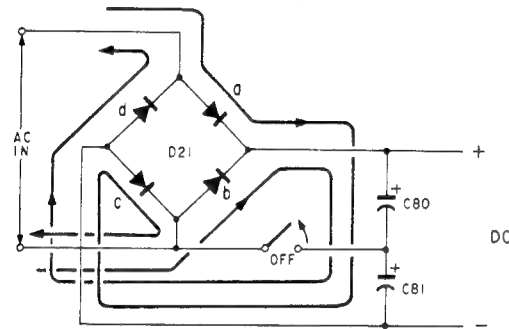
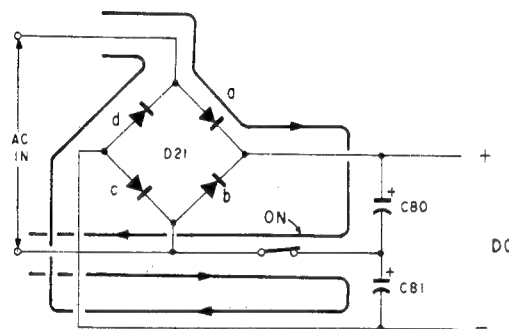


Figure 18(a)



AC IN Passes through D21d and charges to C81.  
AC Passes through D21a and charges to C80.

Figure 18(b)

#### 3-12-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector. This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically. When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically. Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel. When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

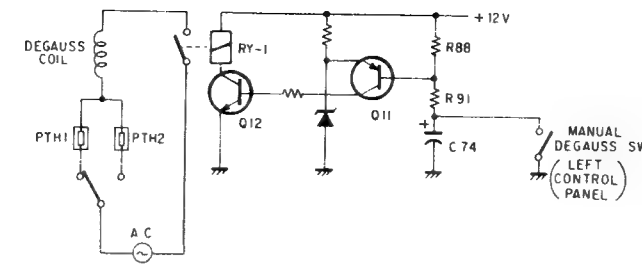


Figure 19

#### 3-12-3. Starter Circuit

Blocking oscillator composed of IC1 and T4 starts working by turning the power on. DC output voltage of the rectifying-circuit, D7 and C57 in T4 secondary circuit, is supplied to the regulator-circuit IC (IC2 and IC3) with line voltage of 50 to 70V AC (at 110/120V AC) by function of the start-rectifying circuit (Q7, Q8, Q9). And the regulator circuit starts working and as +15V-line works, the voltage is supplied to the regulator-circuit IC through D20. At the same time, a voltage for stopping the blocking-oscillator operation is provided to IC1 from the primary winding ⑥-⑦ of the switching regulator transformer SRT2.

#### 3-12-4. Switching Regulator Circuit

Block diagram is shown in Figure 20. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage  $E_{IN}$  rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer). Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, +15V, +18V and +5V. The other is for high voltage +150V power supply.

Low voltages are generated by IC2, T1, T2, T3 and Q1.

High voltages are generated by IC3, T6, T7 and Q2

Refer to block diagram

Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

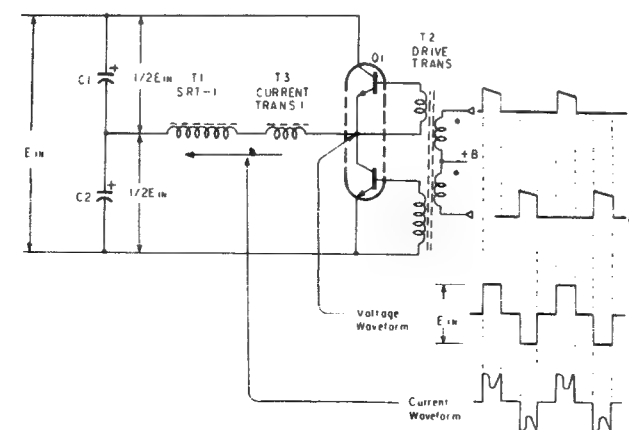
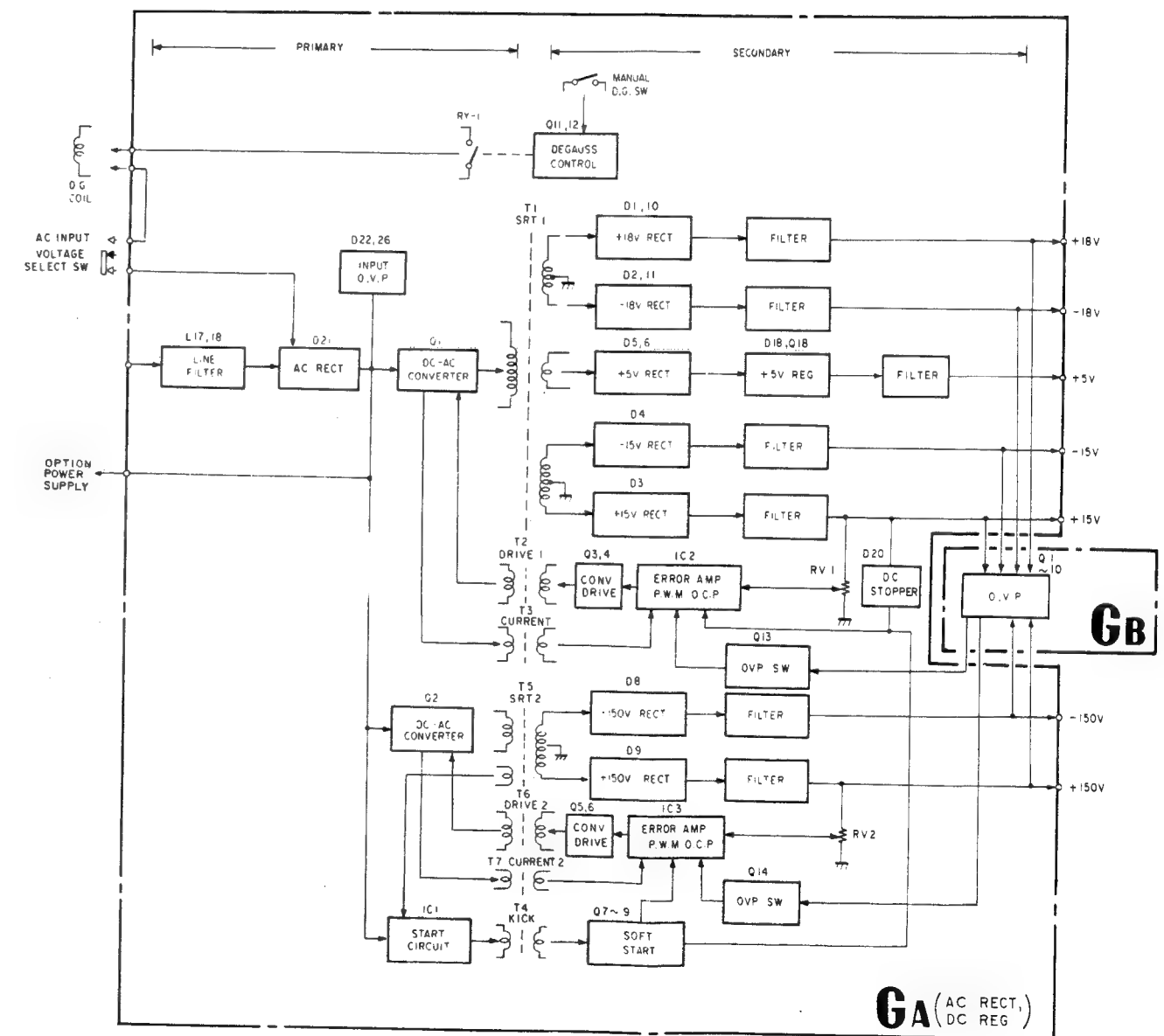


Figure 20

#### 3-12-5. Over Voltage Protector

GB board, mounted on the GA board, is a protection circuit that when the output voltage surpasses the rated value for some reason, it makes short-circuit the CT (frequency-determination capacitor) on IC2 and IC3 and the regulator stops its operation to protect the circuits.

### BLOCK DIAGRAM OF GA, GB BOARDS



### 3-13. CONVERGENCE CIRCUIT (DB, DC BOARDS, DCT BLOCK)

#### 3-13-1. General Description

This is a simple explanation of the convergence system in Super fine Trinitron picture tube used in this model. The Deflection Yoke (DY) used in this model generates an almost uniform magnetic field in order to get fine beam spot size. Accordingly basically misconvergence of horizontal direction as shown in Figure 21 is generated on the picture screen.

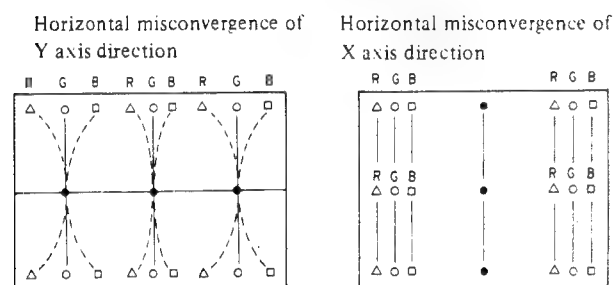


Figure 21

#### 3-13-2. Static Electrical Convergence System

Trinitron system has a unique static convergence system. The structure of electric gun is shown in Figure 22. G6 is the electrode for convergence. Static electrical convergence control can be used. In this system beam spot deterioration is less than that of the electromagnetic system.

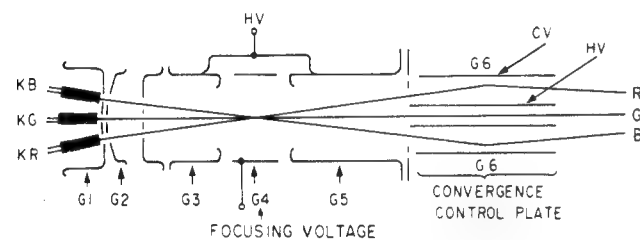


Figure 22

#### 3-13-3. Convergence Correction Circuit (Horizontal Convergence)

Misconvergence of horizontal direction on Y axis is corrected by applying vertical rate parabola waveform to the convergence plate (G6). And misconvergence of horizontal direction is corrected by applying horizontal rate parabola waveform to G6. See Figure 23.

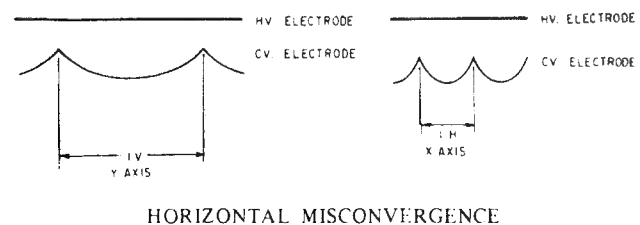


Figure 23

In this model, transformer is used to supply correction voltage to the G6 electrode for the horizontal direction misconvergence. In the secondary of the transformer peak clamp circuit using diode is applied so that both the vertical rate parabola waveform and horizontal rate parabola waveform are mixed and supplied to CV electrode. See Figure 24.

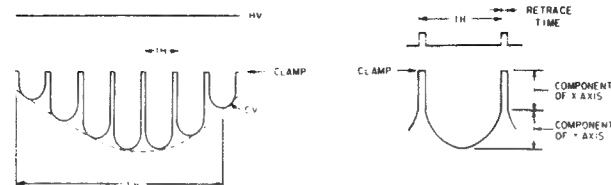


Figure 24

The correction waveforms are generated in DB board and output amplifier is located in FB board.

#### 3-13-4. Vertical Convergence

Theoretically there is no misconvergence of Vertical direction since electric gun is aligned in line. But there is a slight amount of misconvergence due to the variations of CRT and DY and also due to the terrestrial magnetism.

There are also 2 kinds of misconvergence of vertical direction on X axis and Y axis as same as horizontal direction.

Misconvergence of Vertical direction on X axis is corrected by CY (convergence yoke).

Figure 25 shows the CRT neck as seen from the rear side.

Red beam and Blue beam are moved to the vertical direction differentially by CY. As Green beam is at the center of the CRT neck, it is not affected by the magnetic field of CY due to the cancellation of the magnetic field at the center of the neck.

Misconvergence of vertical direction on Y axis is corrected by NTC (Neck Twist Coil).

A Neck Twist Coil is wound around the center of electrode G2 ~ G3 (See Figure 25) for the correction. Theoretically, as the RED and Blue beams have HI component (They are opposite direction) as seen in Figure 25, they move to the vertical direction due to the magnetic field generated by NTC.

However as magnetic field of the NTC is the parallel to the Green beam. Green beam is not affected.

Correction waveform generator is located in DB board, output amplifier of CY is in FB board and output amplifier of NTC is in DB board.

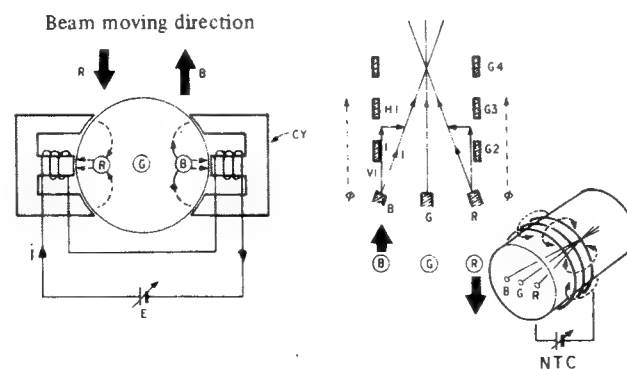
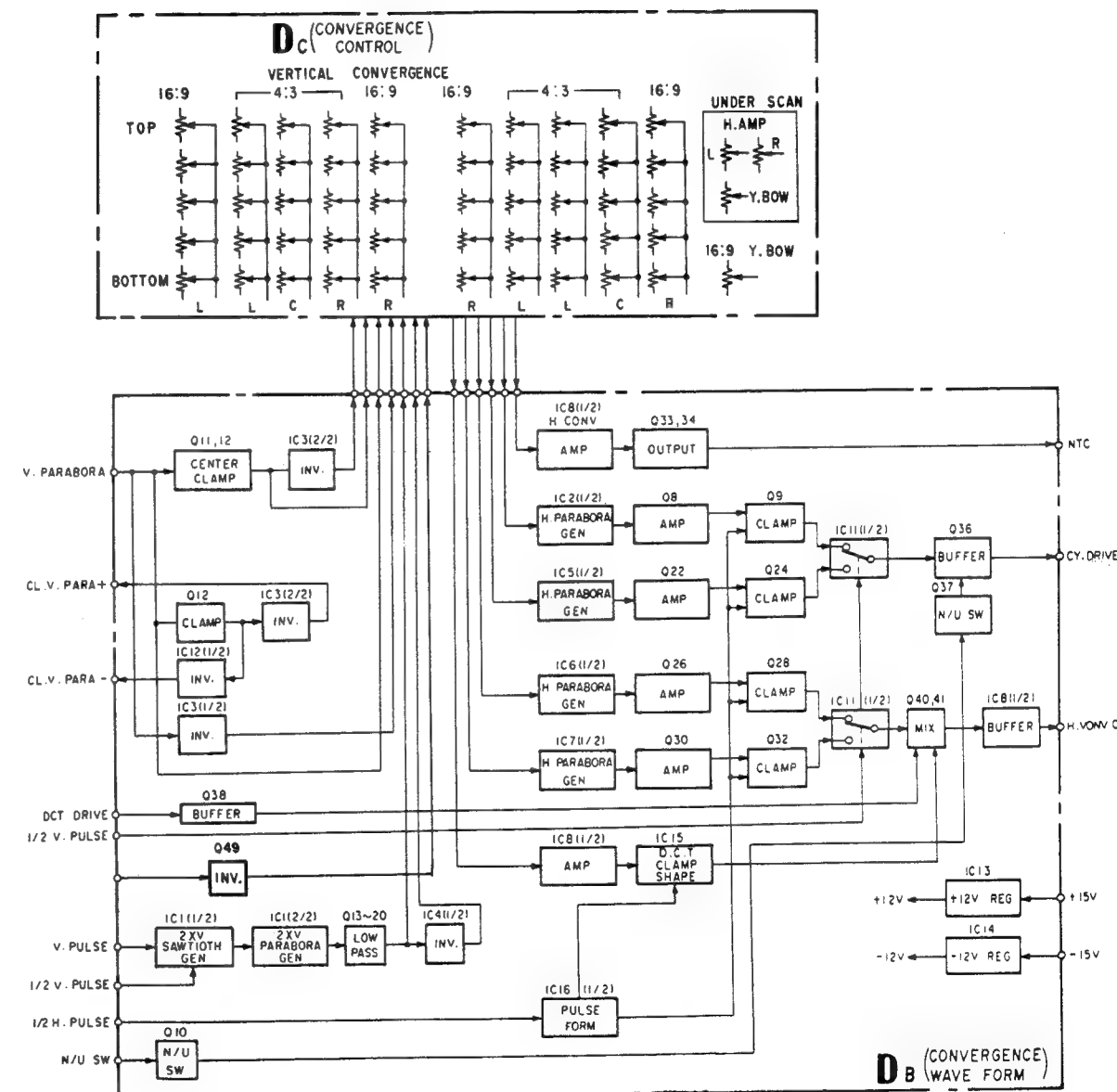


Figure 25

### BLOCK DIAGRAM OF DB, DC BOARD



### 3-13-5. Convergence Correction Waveform Generator (DB BOARD)

This monitor incorporates unique convergence circuit which can adjust convergence at 15 positions of the picture screen, each 15 potentiometers for horizontal and vertical convergence adjustments are located on the left side of the drawer corresponding to the picture screen.

### 3-13-6. Horizontal Convergence Correction Waveform Generator

A vertical rate parabola waveform is supplied to the DB board from the DB board and is inverted and switched to make correction waveform.

For the left side of the picture screen, the correction waveform is compounded by adjusting potentiometers RV16 ~ RV20 on the DC board. This waveform is converted to horizontal rate parabola waveform which level is proportional to the compounded waveform by H parabola generator (IC6, Q25). This is amplified by transistor Q26 and clamped at the center position of the horizontal period by transistor Q28 and IC6. See Figure 26.

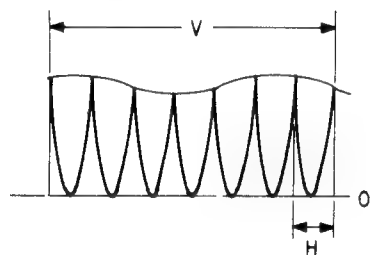


Figure 26

For the right side of the picture screen, the correction waveform is generated by adjusting potentiometers RV26 ~ RV30 on the DC board as same as the left side of the picture.

These correction waveforms (left and right side) are switched and mixed by analog switcher which activates at 1/2H period as seen in Figure 27.

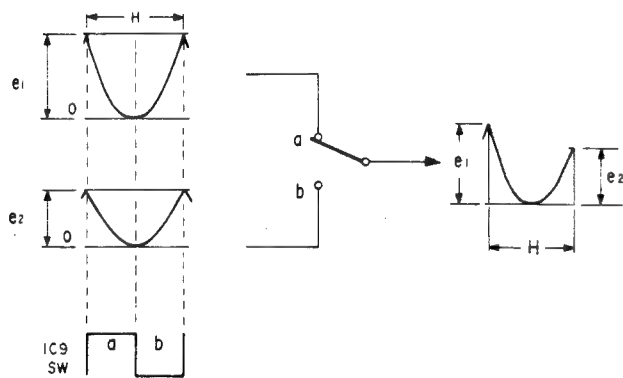


Figure 27

As a result, right side adjustments and left side adjustment can be performed independently of each other.

For the center of the picture screen, vertical parabola waveform is compounded to the correction waveform by adjusting potentiometers RV21 ~ 25 on the DC board, and converted to horizontal pulse. This means amplitude of horizontal pulse is modulated by vertical parabola. (Q40, Q41) See Figure 24.

This modulated pulse is mixed with horizontal parabola for left and right side correction. This mixed waveform is amplified and supplied to convergence plate in CRT via DCT. Thus horizontal convergence is corrected. See Figure 28.

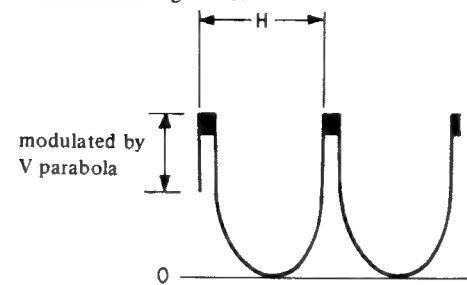


Figure 28

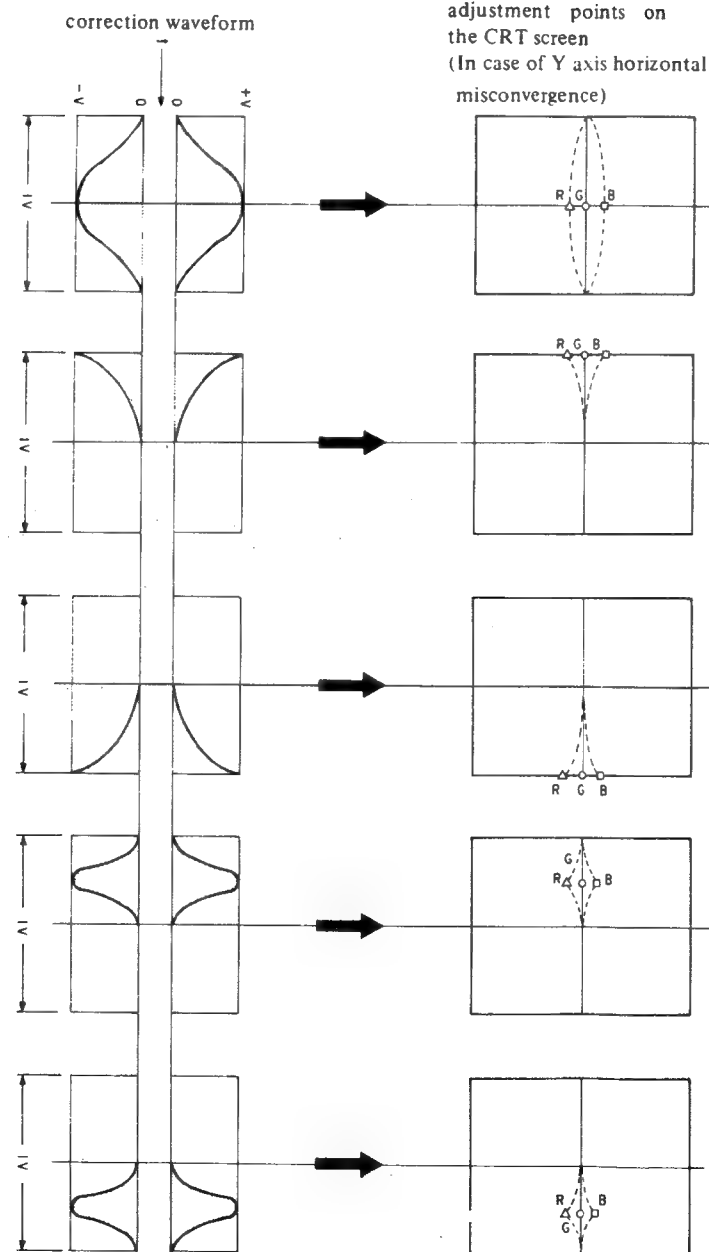


Figure 29

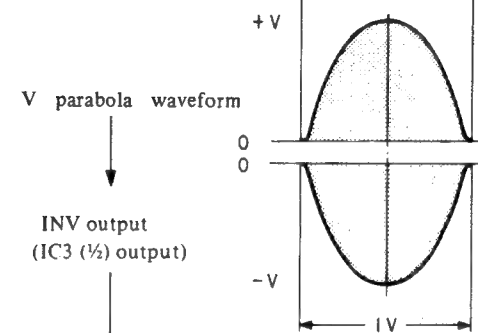
### 3-13-7. Vertical Convergence Correction Waveform Generator

For the left and right side of the picture, correction circuit for vertical convergence is same as horizontal correction circuit of left and right side of the picture. The correction waveform is amplified in EB board and supplied to CY.

For the center of picture screen, correction waveform is fed to amplifier (IC8 (1/2), Q33 Q34) and supplied to NTC (Neck twist Coil).

This vertical convergence is performed.

#### Diagram of correction waveform generation



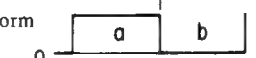
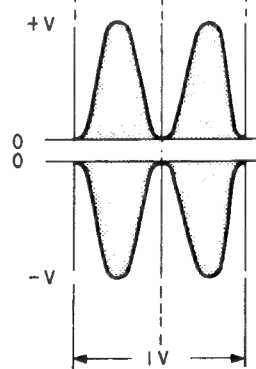
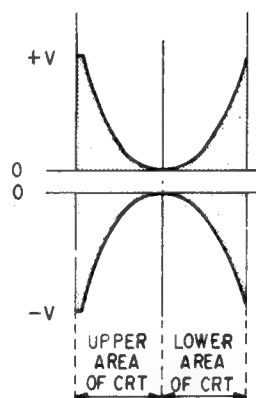
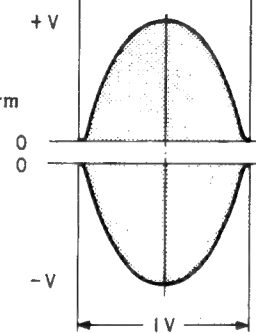
Clamped (output to Q12) at center

INV (IC3 (2/2) output)

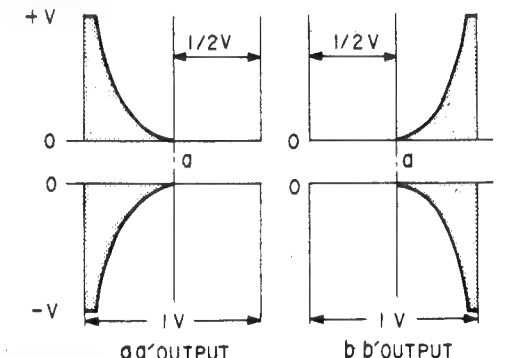
2xV parabola (Q20 output)

INV (IC4 (1/2) output)

1/2 V switching waveform



Correction waveform for top and bottom of the CRT screen (Vertical rate)



Correction waveform for center position of CRT screen (Vertical rate)

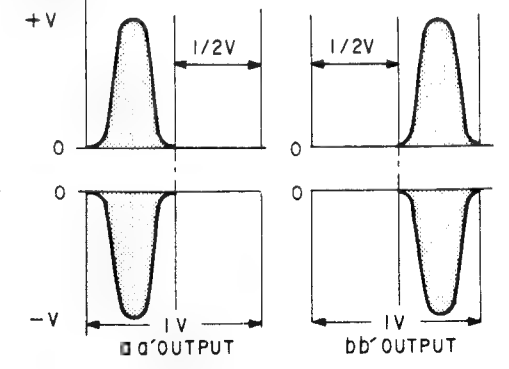


Figure 30

### 3-14. DEFLECTION CIRCUIT (DA BOARD)

#### 3-14-1. H Delay and Horizontal AFC (Automatic Frequency Control) Circuit

In this model H delay function is performed by delaying H. AFC pulse in the horizontal AFC circuit. (See Figure 31)  
H. AFC pulse which is fed from H.O.T. (Horizontal Output transformer) is wave shaped and is delayed about 20  $\mu$ s by IC1 (2/2). This delayed pulse is integrated by inductor L1, and capacitor C14, thus sawtooth waveform is obtained and fed to terminal pin ④ of IC4. AFC detection is performed by IC4. Output of AFC detector is fed to control terminal of horizontal oscillator (H.OSC) via low pass filter composed of capacitor C12, C15 and resistor R10. 3 types of AFC mode are selected by changing low pass filter which determines AFC time constant. AFC time constant circuit is composed of switch S1, resistor R13, R14, R15 and capacitor C17, C18.

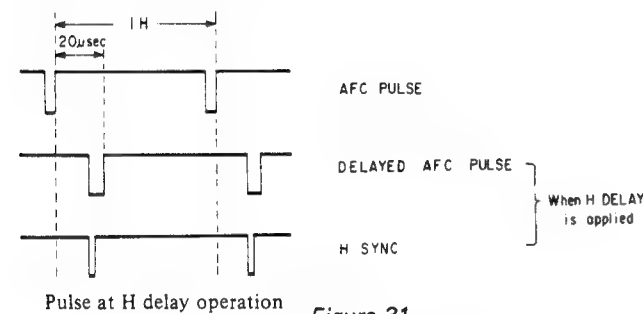


Figure 31

#### 3-14-2. Horizontal Linearity Correction Circuit

In this model Horizontal Linearity correction is made by applying correction voltage to the Horizontal deflection circuit. Basically, Linearity correction is made by modulating power source of horizontal output circuit with horizontal sawtooth voltage. Also So-called "Inside pincushion" correction is performed by applying correction waveform to S correction capacitor. This correction waveform is generated by balanced modulator (IC7) with vertical rate parabola waveform. See Figure 32.  
Horizontal sawtooth waveform is generated by IC5 (1/2) for horizontal linearity correction. Horizontal rate parabola waveform is generated by integration of saw tooth by IC6 (1/2). This parabola waveform is performed balanced modulation by IC7 with vertical rate parabola waveform, horizontal sawtooth and parabola waveform are fed to horizontal linearity output amplifier in EA board. Correction of horizontal linearity correction and inside pincushion correction are performed.

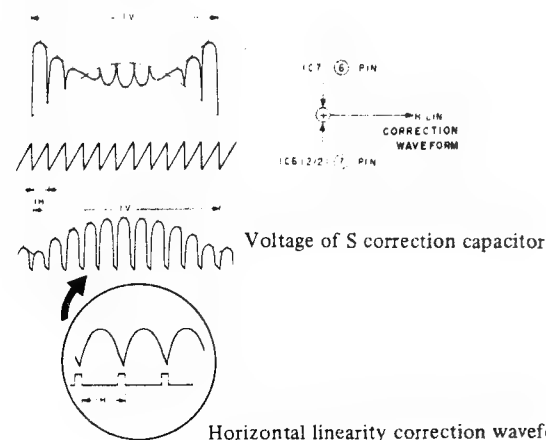


Figure 32

#### 3-14-3. Horizontal Blanking Pulse Generator

Horizontal rate sawtooth waveform generated in H. Linearity circuit is fed to the comparator IC8 (1/2). In this circuit, 1/2H delayed pulse is obtained. This pulse is fed to integrator IC9 (1/2) and 1/2H delayed sawtooth waveform is obtained and this is fed to the comparator IC10 (1/2). Thus the comparator generates horizontal pulse to make H. Blanking pulse which starts just before the starting edge of the retrace time. Also width of horizontal blanking pulse is determined by JK-FF IC1 (1/2).

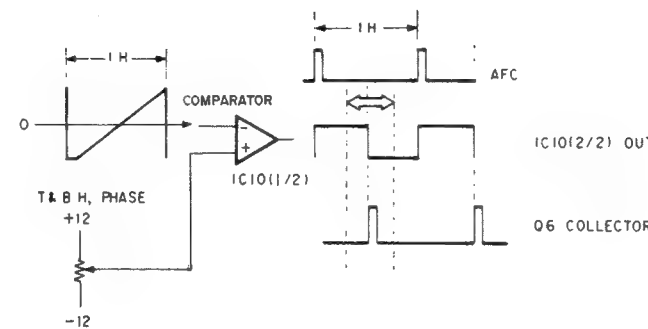


Figure 33

#### 3-14-4. Top & Bottom Pincushion Circuit

Horizontal rate sawtooth waveform generated in H Linearity circuit is also fed to IC10. IC10 generates advanced H pulse for the phase correction because vertical Deflection Yoke works as an integrator at horizontal rate, and deflection current for Top & Bottom pincushion correction is delayed about 1/2H for this reason. See Figure 33.  
Advanced H pulse is fed to IC11 (1/2) and advanced horizontal sawtooth waveform is generated. It is integrated by IC11 (2/2) and horizontal rate parabola waveform is obtained. Modulated butterfly waveform for Top & Bottom pincushion correction is obtained by Balanced modulator IC12. In this balanced modulator, horizontal rate parabola waveform is used as a carrier and vertical rate sawtooth waveform is modulated by this carrier. See Figure 34.  
This correction waveform is fed to vertical deflection output amplifier in EB board.

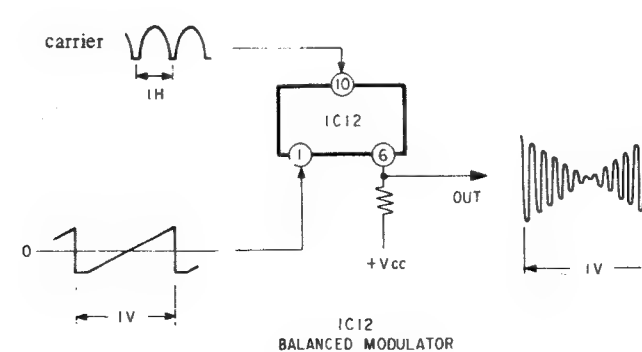


Figure 34

#### 3-14-5. Automatic 50/60Hz Field Selection Circuit

This model has an automatic vertical field frequency selection circuit so that color systems with different frequencies such as NTSC or PAL and SECAM can be received. IC18 is automatic field frequency detection device and its output switches (IC13) time constant of integrator in vertical deflection circuit.

#### 3-14-6. Scan Mode Selection Circuit

There are 3 modes of scanning in this model: NORMAL SCAN/ UNDER SCAN/SET UP SCAN. There are level adjustments for H1 width, V, height side pincushion and top & bottom pincushion. Levels of correction waveforms are switched so that these adjustments are made independently for each scanning mode. IC14, IC15 and IC16 activates for this purpose.

#### 3-14-7. Vertical Deflection, Side Pincushion Correction

IC19 (1/2) generates vertical rate sawtooth waveform for vertical deflection. V sawtooth waveform is generated by the integrator IC9 (1/2) which is reset by V sync. Also vertical rate parabola is generated by integrating V. sawtooth waveform by IC9 (2/2). This V parabola is used for side pincushion correction, and also V. parabola is converted to sine waveform by IC20 (1/2) and is mixed with V parabola waveform. This mixed waveform is used for side pincushion correction and fed to side pincushion output amplifier in EA board.  
Vertical drive voltage for vertical deflection is generated by mixing vertical rate sawtooth waveform generated by IC19 (1/2) and sine waveform generated by IC22 (1/2). This drive waveform is fed to vertical deflection output amplifier. Balance adjustment of vertical linearity correction can be performed by IC22 (1/2) and vertical centering can be adjusted by IC22 (2/2).

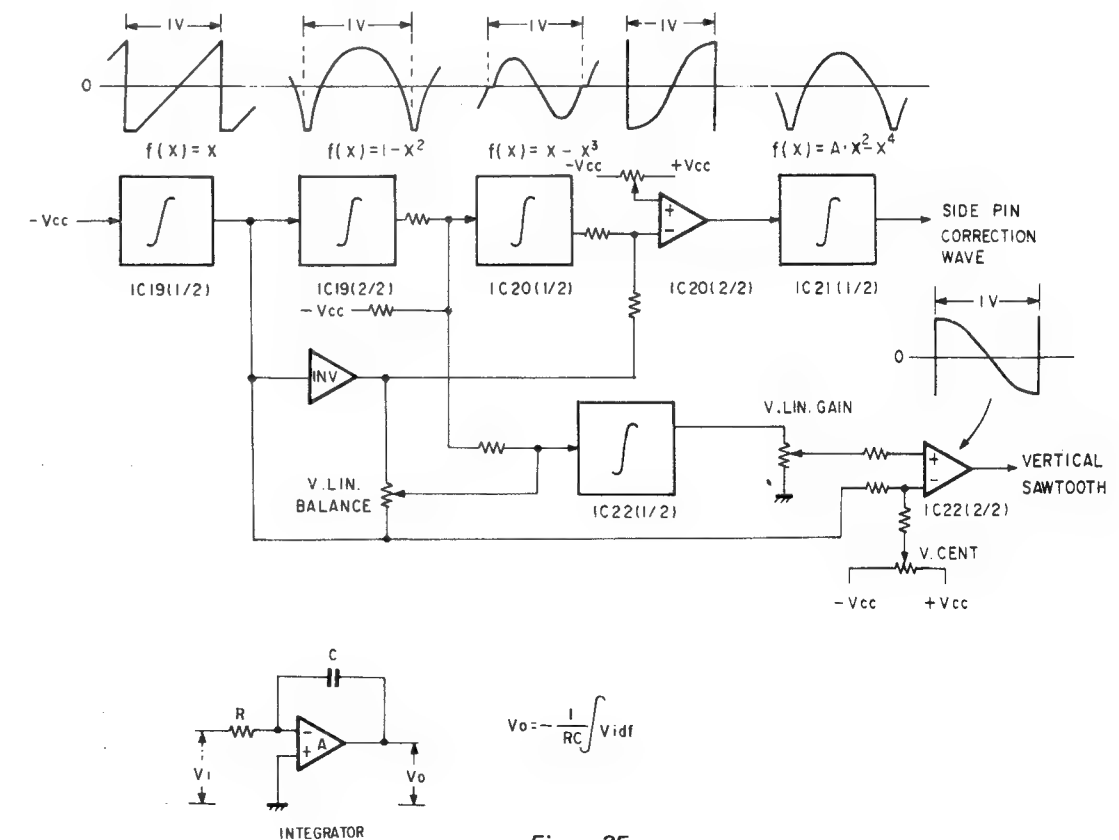
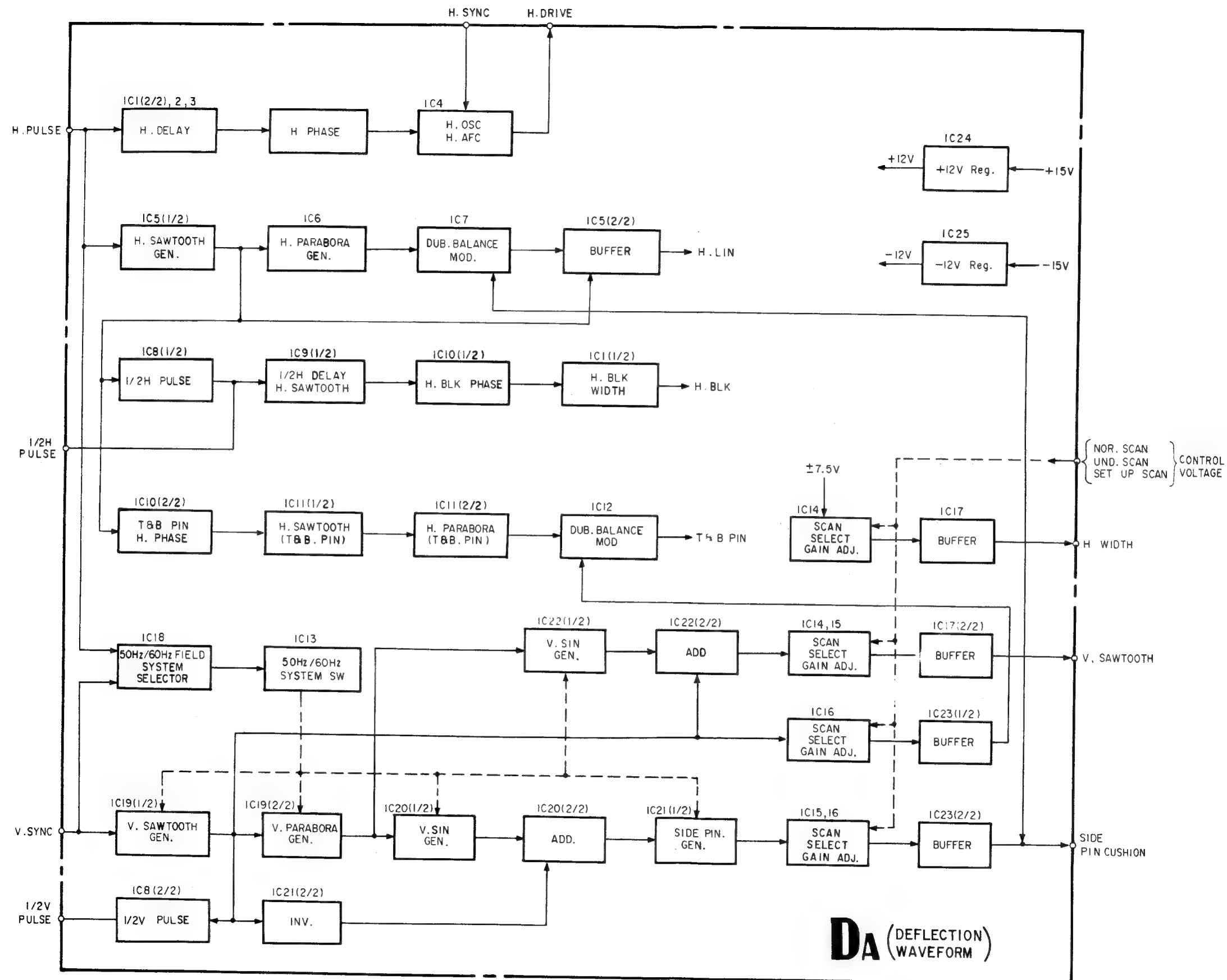


Figure 35

# BLOCK DIAGRAM OF DA BOARD



### 3-15. HORIZONTAL OUTPUT (EA BOARD)

#### 3-15-1. Horizontal Deflection Circuit

Horizontal drive pulse for Horizontal deflection output is made at DA board and is fed to T4 (Horizontal Drive Transformer) via Q13 (H. driver). T4 is driven by Q13 and output pulse of T4 drives Q14 (Horizontal Output Transistor).

To obtain high efficiency in this model, DC-DC converter is used for side pincushion correction, Horizontal Width adjustment and +B Line voltage conversion to the horizontal deflection circuit.

This converted Line voltage is fed to horizontal deflection output circuit via H.O.T (Horizontal Output Transformer). Side pincushion correction and H. width adjustment are made by this DC-DC converter. IC1 contains error amplifier and PWM (Pulse Width Modulator) circuit for DC-DC converter. Side pincushion correction waveform and DC voltage for H. Width adjustment are made in DA board and supplied to error amplifier to control DC-DC converter.

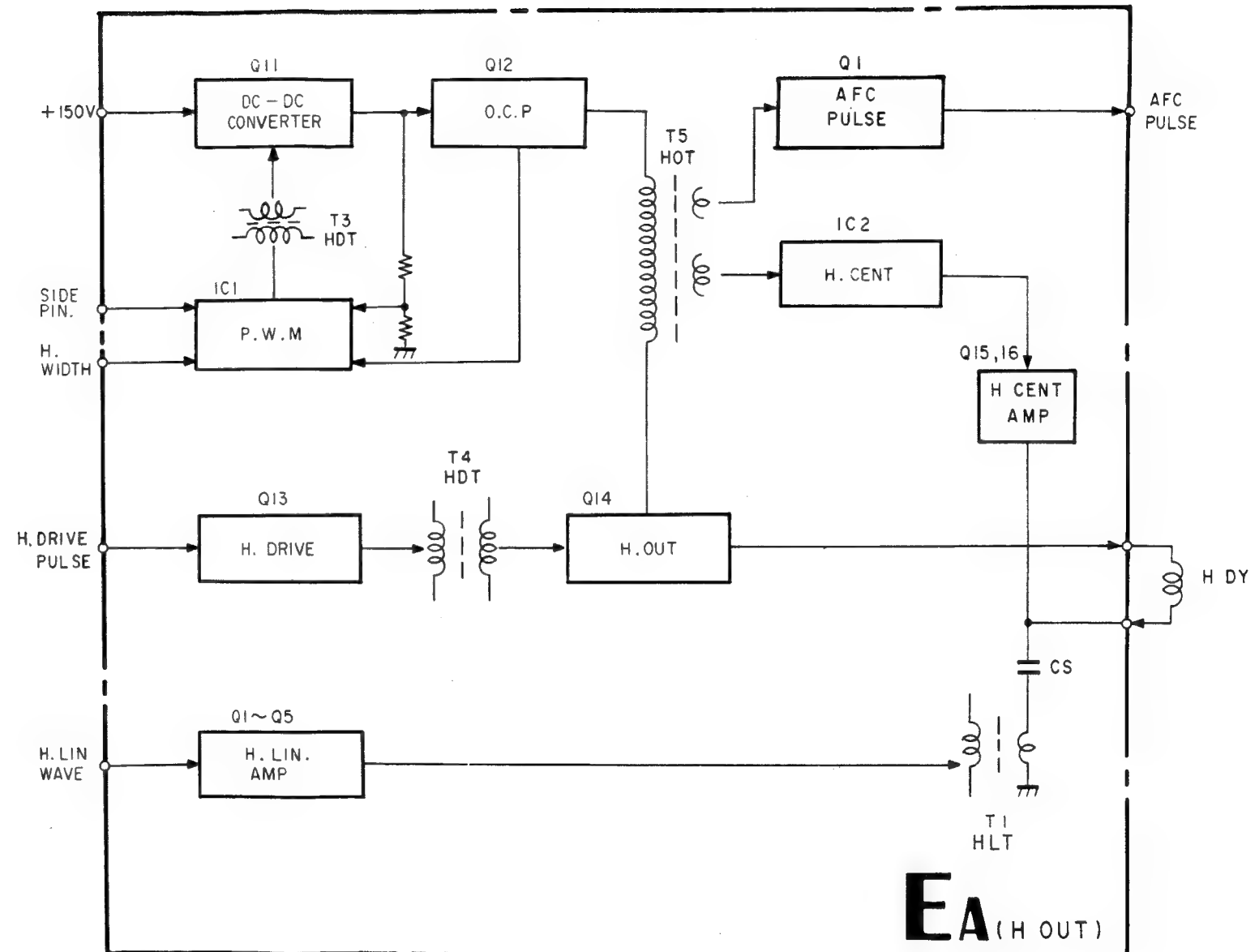
#### 3-15-2. Horizontal Centering Circuit

± low voltages power supply for H centering are made in this circuit from output of secondary windings of T5 (Horizontal Output Transformer). These low voltages are converted to current source for mixing DC current on the deflection current. In this circuit Bow shaped geometry distortion due to the H centering adjustment is adjusted by providing vertical rate parabola waveform current on the H centering current.

#### 3-15-3. Horizontal Linearity Correction Circuit

Waveform for Horizontal Linearity correction made in DA board is fed to SEPP amplifier (Single Ended Push Pull) which are composed of Q1 - Q5 transistors. Output of this amplifier is fed to H deflection circuit (Deflection Yoke) and make correction of H linearity by T1 (Horizontal Linearity Transformer).

BLOCK DIAGRAM OF EA BOARD





### 3-16. HIGH VOLTAGE REGULATOR (PA BOARD)

This high voltage regulator uses also DC-DC converter so as to reduce power consumption.  
The theory of operation of this circuit is as follows.

#### 3-16-1. Detection of High Voltage

High Voltage applied to the CRT anode is converted to the low voltage by DCT block (Dynamic Convergence Transformer). This low voltage is fed to buffer amplifier IC4(2/2) and compared with external reference voltage in IC1. The DCT contains resistor-network and transformer for convergence adjustment. This resistor-network works as a voltage divider.

#### 3-16-2. PWM Modulator

IC1 works as error amplifier and PWM modulator comparing voltage between high voltage and the reference voltage is amplified and modulated so as to drive Q102 output transistor. Output signal from IC1, which is modulated in PWM, is fed to Q102 via drive transformer. +B line supplied to FBT (Fly Back Transformer) circuit is controlled by switching Q102 output transistor on/off.

#### 3-16-3. Output Circuit

When high voltage drops down, output voltage of DCT also drops as above mentioned. At this time PWM circuit is designed so that the ON period of Q102 output transistor should be longer than high voltage drops down. +B line, switched ON/OFF by Q102, is supplied to converter circuit which drives FBT via LOT (Line Output Transformer).

Amount of collector current of Q103, which drives FBT, depends upon ON period of Q102 because PWM modulator is triggered by H. pulse. Therefore when ON period of Q102 is longer, collector current of Q103 increases and energy stored in capacitor C124 increases, causing potential of C124 to rise. (Refer to Figure 37) When output transistor Q103 goes off, flyback pulse is generated by resonance between capacitor C108 and inductance obtained by parallel connection of FBT and LOT. This flyback pulse is transferred to the secondary circuit of FBT. Therefore high voltage is generated.

#### 3-16-4. High Voltage regulator

Q102, Q107, IC4 (2/2), IC1 (IC for controlling P.W.M) and HVR (DCT block) form a regulator.

Since the detection pin voltage of HVR is decreased when the high voltage is lowered due to increase of the CRT current, it makes the switch ON time length of Q102 longer. As a result, the collector peak current of Q103 is increased and accordingly, the energy accumulated in C124, which is fed to it through the FBT, is increased. In this way, it raises the potential of C124 and regulates the high voltage.

Q103, C108, C124 and the FBT form a high voltage converter circuit.

The pulse of on-duty 60% is generated with the H pulse by a time constant circuit which consists of Q109, Q110, Q111, Q112, R143, C128, R144, C127 and D111. When Q103 is switched OFF due to the on-duty 60% pulse, flyback pulse is generated at the collector of Q103 by resonating of the LOT, FBT and C108.

#### 3-16-5. High Voltage Protection Circuit

High voltage protector activates to shut down high voltage, when high voltage exceeds the predetermined value so as to prevent X-ray radiation.

The high voltage converted to the low voltage is detected at the terminal of DCT block. This detected voltage is fed to the + input terminal of comparator IC2(2/2) via low pass filter, which is composed of resistor R245 and capacitor C216. When this voltage exceeds the reference voltage, the voltage of  $\ominus$  input terminal of comparator IC2(2/2), output level of this comparator goes high level and turns SCR (D206) gate on to shut down the drive pulse of flyback generator. Thus high voltage stops.  
The reference voltage of the comparator IC2(2/2) is made by mixing stabilized voltage (zener diode D215)

#### 3-16-6. Protection Circuit for Excess Beam Current

Beam current which flows in secondary windings of FBT is measured at the terminal 9 of FBT. This beam current is converted to the voltage by resistor R1 (R4) and R2 (R3), R5 (R6) located in PB board in series connection of secondary windings of FBT. This converted voltage is fed to  $\ominus$  input of comparator IC2(1/2) or IC3(1/2). As beam current increases,  $\ominus$  input voltage goes down. When beam current increases until  $\ominus$  input voltage goes below the reference voltage ( $\oplus$  input terminal voltage) output voltage of comparator goes up high level and SCR (D205 or D206) turns ON. Thus drive pulse of flyback generator is shut down. Therefore high voltage stops.

#### 3-16-7. CRT Protection Circuit

When vertical deflection stops, this circuit activates to shut down high voltage to prevent damage of CRT.

When vertical deflection stops, there is no vertical output pulse generated at vertical output amplifier. So Q201 transistor is cut off and output of comparator IC4(1/2) goes up high level. Q202 transistor turns on and flyback generator stops.

#### 3-16-8. G2 Voltage Regulator

Flyback pulse generated at Q103 (HV output transistor) is rectified to obtain DC voltage. Q104 transistor which works in accordance with G2 control circuit in BI board supplied proper voltage to G2 of CRT.

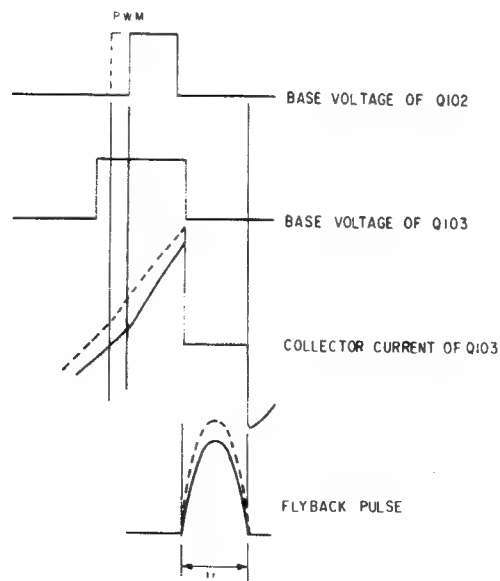


Figure 36

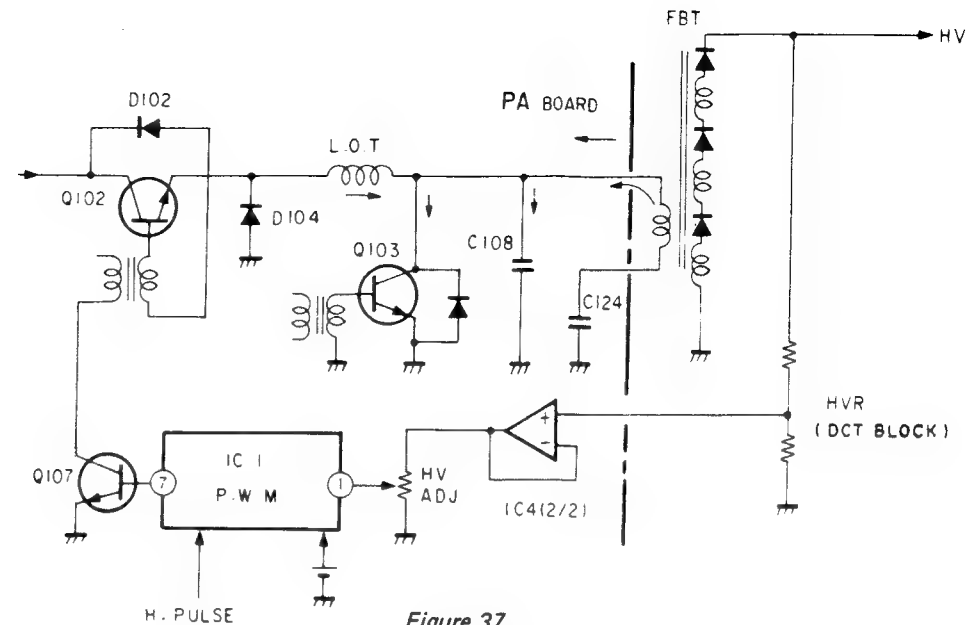
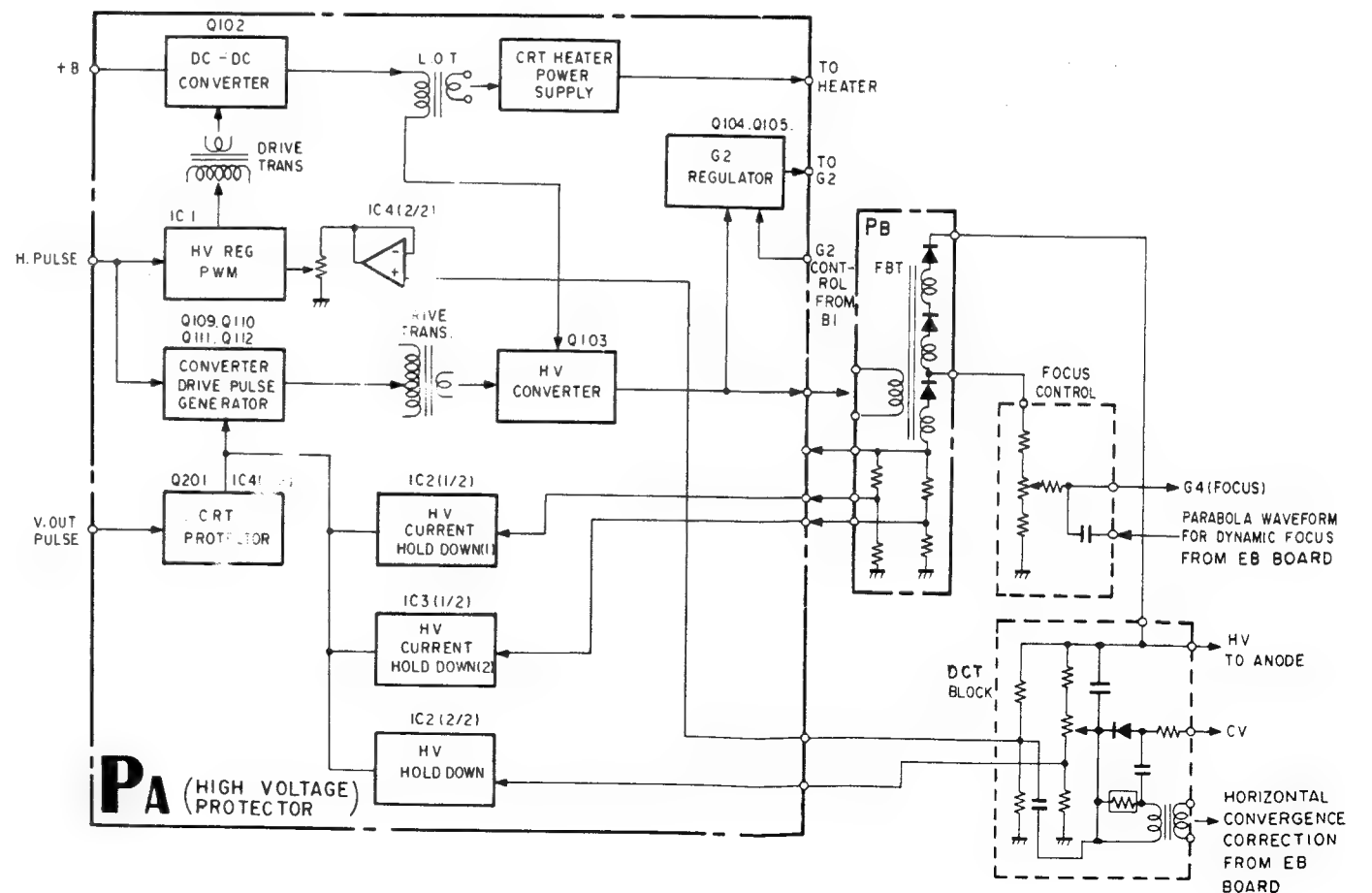


Figure 37

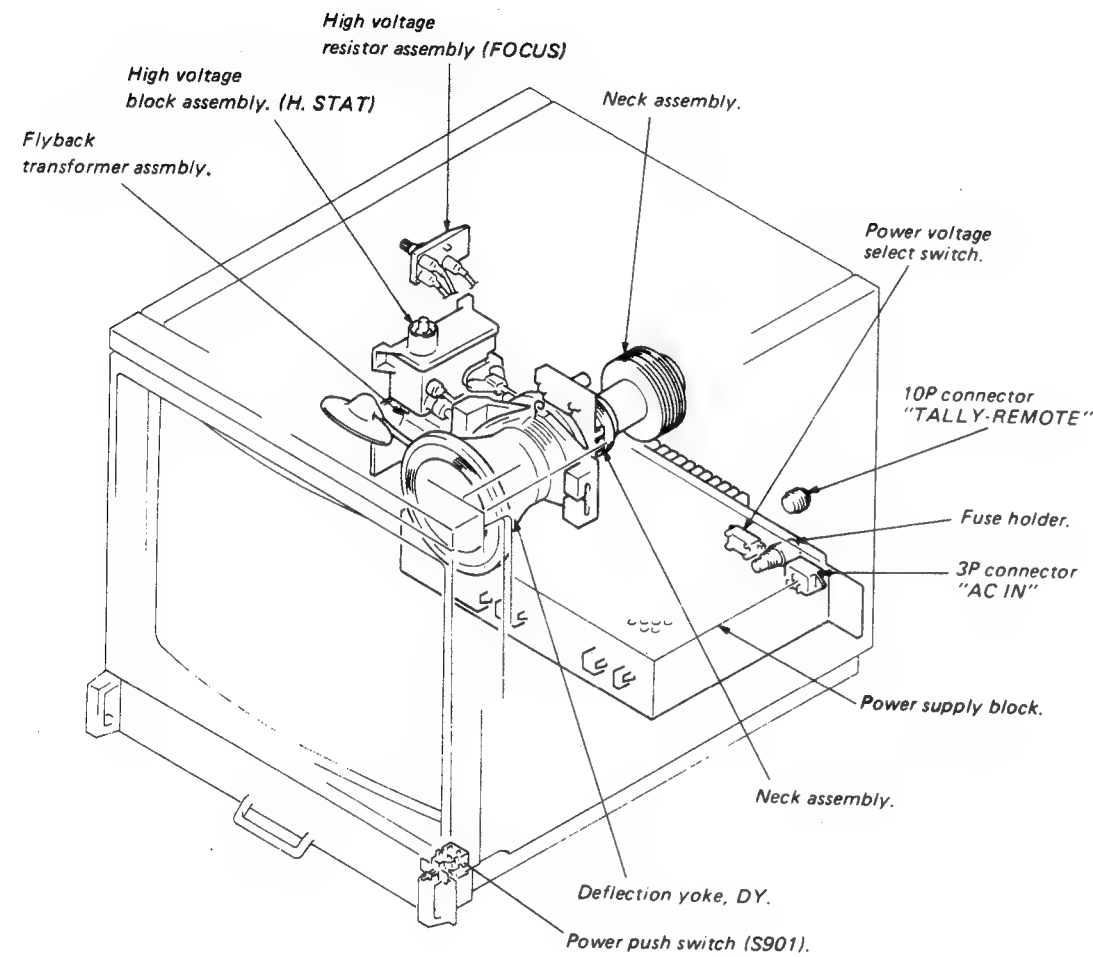
### BLOCK DIAGRAM OF PA BOARD



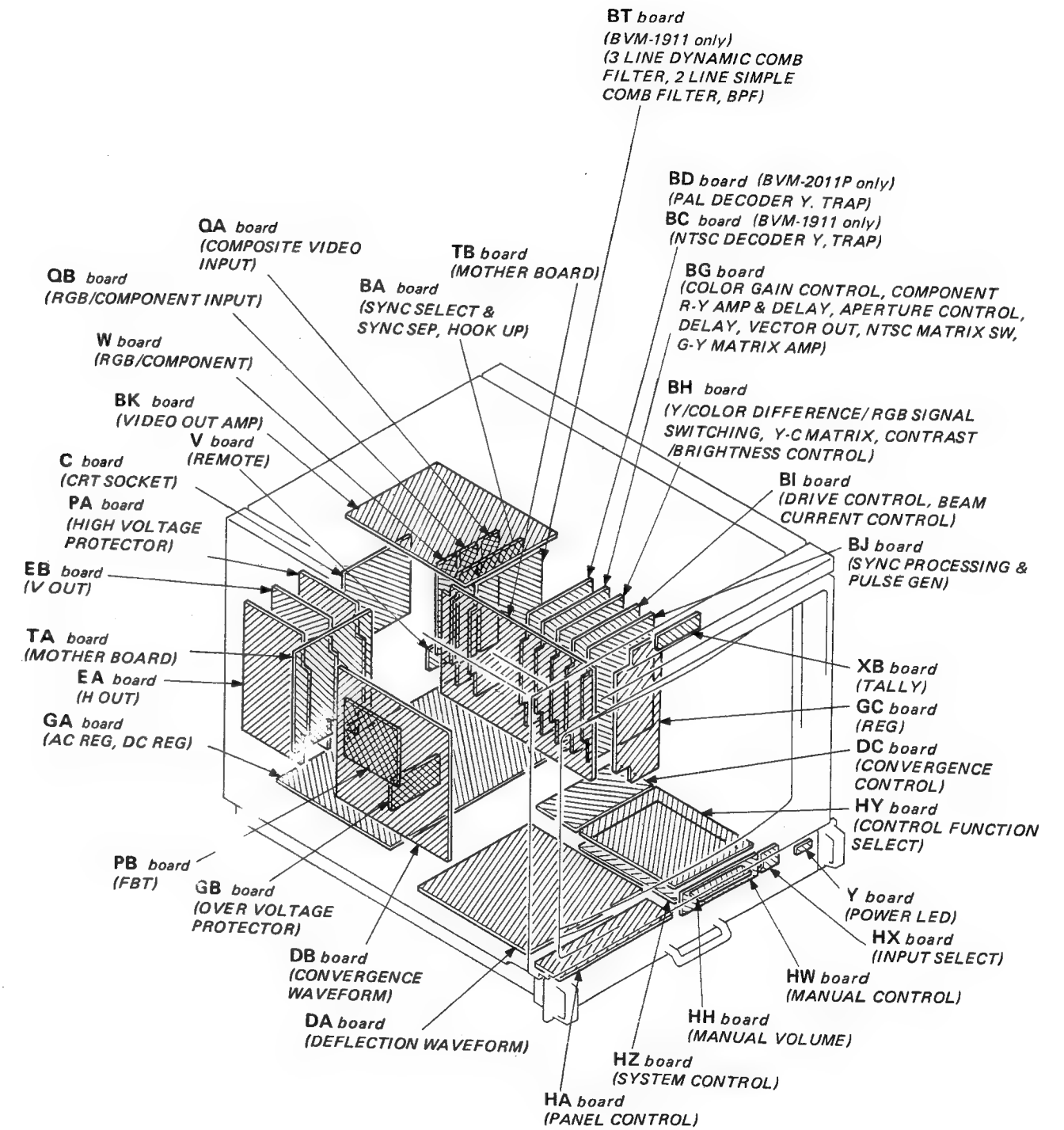


## SECTION 4 ADJUSTMENTS

### 4-1. INTERNAL VIEW



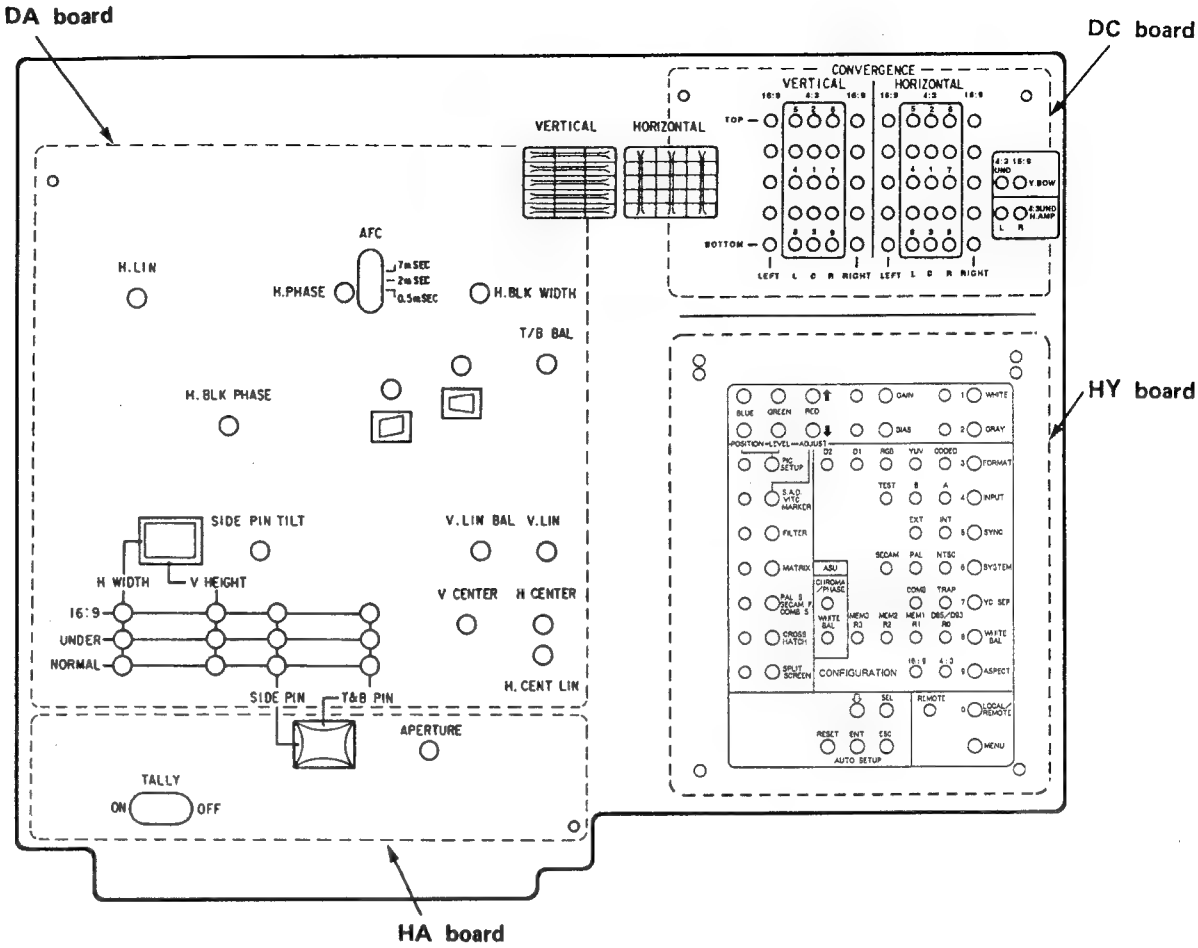
### 4-2. CIRCUIT BOARDS LOCATION



4-3. QUICK REFERENCE

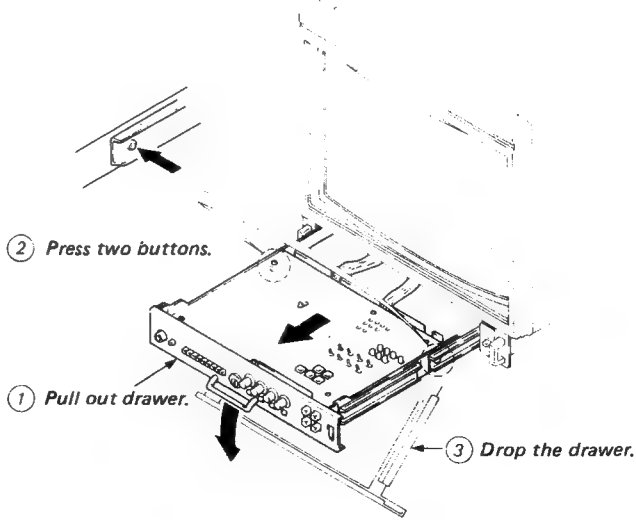
BOARD SECTION	BA	BC	BD	BG	BH	BI	BJ	BK	BT	C	DA	DB
CIRCUIT DESCRIPTION	3-1	3-21	3-19	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-17	—	3-31	3-27
ADJUSTMENTS	4-23 4-27	4-33	4-63	4-23 4-29	4-23	—	4-21 4-32 4-46	4-47	4-49	—	4-78	—
BLOCK DIAGRAM	3-2	3-22	3-20	3-4	3-5	3-7	3-9	3-13	3-17	—	3-33	3-28
MOUNTING DIAGRAM	5-15	5-25	5-33	5-35	5-43	5-45	5-53	5-55	5-20	5-88	5-63	5-65
SCHEMATIC DIAGRAM	5-17	5-27	5-30	5-37	5-41	5-47	5-51	5-57	5-23	5-92	5-61	5-67
ELECTRICAL PARTS LIST	7-1	7-4	7-5	7-8	7-11	7-13	7-16	7-18	7-21	7-31	7-37	7-34
BOARD SECTION	DC	EA	EB	GA	GB	GC	HA	HH	HW	HX	HY	HZ
CIRCUIT DESCRIPTION	3-27	3-35	3-23	3-25	3-25	—	—	—	—	—	—	—
ADJUSTMENTS	—	—	—	4-13	—	—	—	—	4-20	—	—	—
BLOCK DIAGRAM	3-28	3-36	3-24	3-26	3-26	—	—	—	—	—	—	—
MOUNTING DIAGRAM	5-73	5-76	5-77	5-83	5-82	5-105	5-95	5-95	5-95	5-96	5-97	5-101
SCHEMATIC DIAGRAM	5-70	5-79	5-79	5-85	5-86	5-107	5-94	5-93	5-93	5-93	5-93	5-99
ELECTRICAL PARTS LIST	7-32	7-40	7-33	7-26	7-31	7-25	7-46	7-42	7-42	7-42	7-42	7-44
BOARD SECTION	PA	PB	QA	QB	TA	TB	V	W	XB	Y	Z	
CIRCUIT DESCRIPTION	3-37	3-37	3-1	3-1	—	—	—	—	—	—	—	
ADJUSTMENTS	4-15	—	—	—	—	—	—	—	—	—	—	
BLOCK DIAGRAM	3-38	3-38	3-2	3-2	—	—	—	—	—	—	—	
MOUNTING DIAGRAM	5-88	5-88	5-104	5-105	5-7	5-11	5-106	5-105	5-96	5-96	5-109	
SCHEMATIC DIAGRAM	5-91	5-92	5-107	5-107	5-9	5-13	5-107	5-108	5-94	5-94	—	
ELECTRICAL PARTS LIST	7-47	7-25	7-25	7-25	7-47	7-47	7-33	7-41	7-1	7-47	7-47	

4-4. SUB CONTROL PANEL LOCATION



ADJUSTING METHOD OF DRAWER BLOCK

\* Pull out sub-control panel and press two stopper buttons to drop it 60° as shown in the figure.



#### 4-5. SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by the potentiometers on the sub control panel.  
(Refer to pages 4-6, 4-7, 4-8 and 4-9)

##### [Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410 and 1411 Series)
2. COLOR ANALYZER
3. LUMINANCE METER

##### [Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Set BRIGHTNESS and CONTRAST VRs to the preset position (□).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Set the purity knob as shown in Fig.1-1.

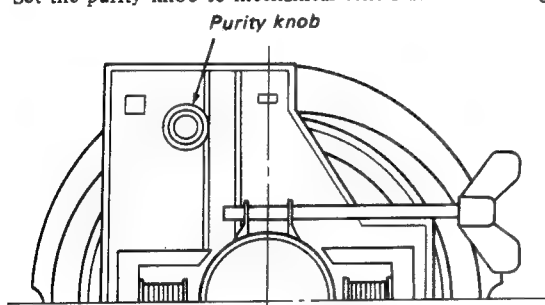


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

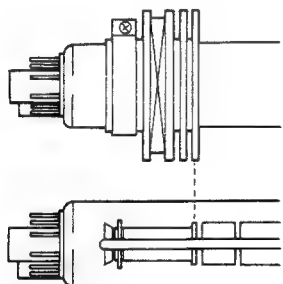


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL are in the IN position and G in the OUT position).
8. Turn purity knob as shown in Fig. 1-3 to bring the green on the center of the screen.

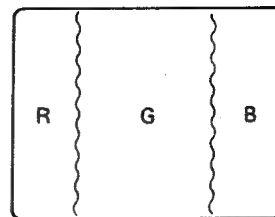


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the DY with the spacers. (Fig. 1-4)

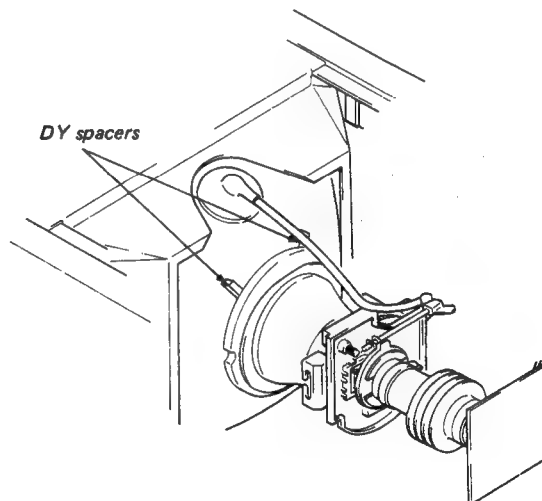
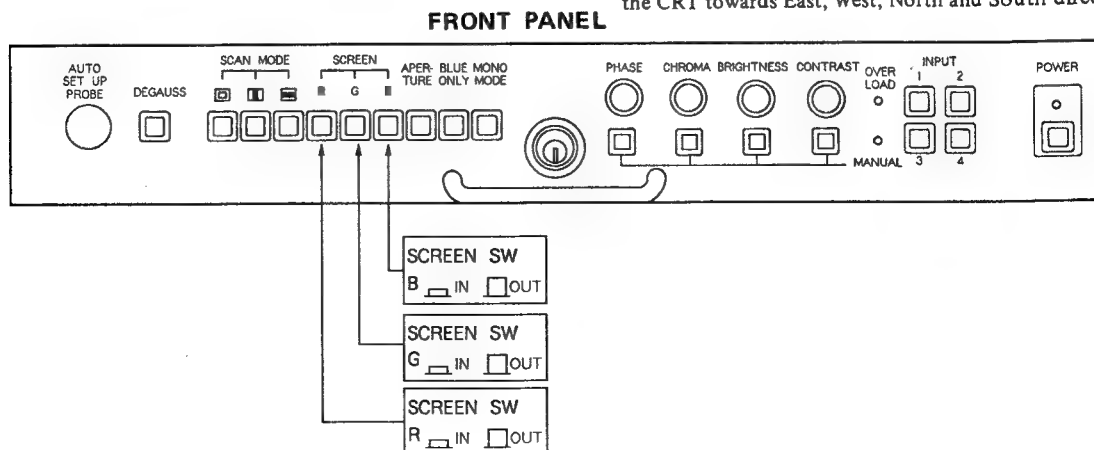


Fig. 1-4.

##### • Final check

After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.



**[Focus adjustment]**

1. Connector signal generator (TEKTRONIX 1410 and 1411).
2. Input a dot or cross-hatch signals.
3. Adjust the FOCUS control for best focus in the central portion of the screen as shown in Fig. 1-5.

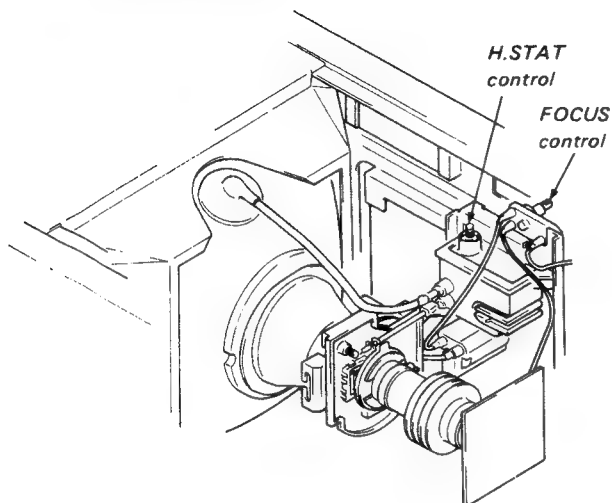
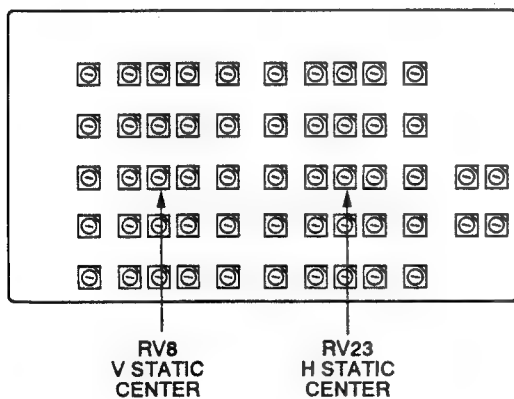


Fig. 1-5.

**[Convergence Adjustment]****Preparation**

1. Complete the signal generator connection and feed the dot and cross-hatch signals.
2. Set the CONTRAST and BRIGHTNESS controls at the points where the dots and the cross-hatch can be observed clearly.
3. Set the H. STATIC CENTER control (RV23) on the DC board to mechanical center as shown in Fig. 1-6.

**DC board**

\* Mechanical center

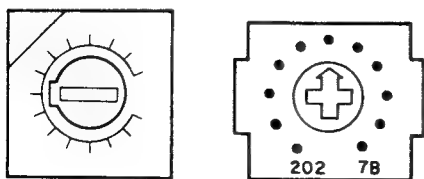


Fig. 1-6.

**[Static Convergence]****• Horizontal Static Convergence**

1. Adjust H. STAT control of DCT BLOCK to match the convergence of red and green in the horizontal direction at screen center.
2. Perform the HMC correction when blue is out of convergence in the same direction on all over the screen.
3. Move the BMC magnet to correct H. static convergence as shown in Fig. 1-7.

**• Vertical Static Convergence**

1. Adjust the V. STATIC CENTER (RV8) on the DC board to match the convergence of red and green in the vertical direction at screen center.
2. When blue is out of the convergence in the same direction all over the screen, perform the VMC correction.
3. Move the BMC magnet to correct static convergence as shown in Fig. 1-7.

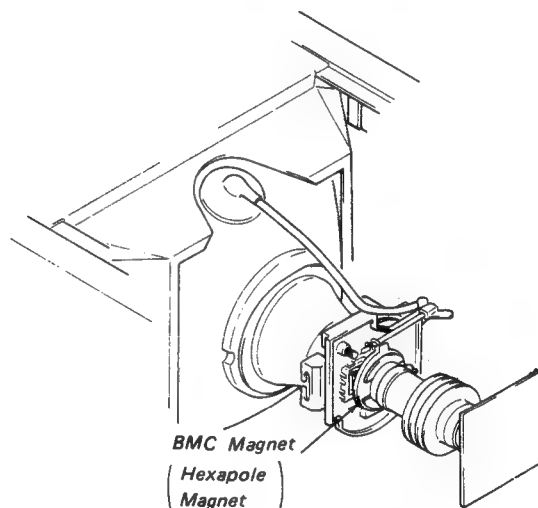


Fig. 1-7.

**• HMC and VMC correction for BMC Magnet.**

1. HMC (Horizontal, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

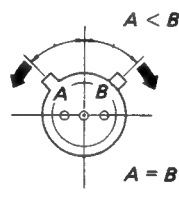
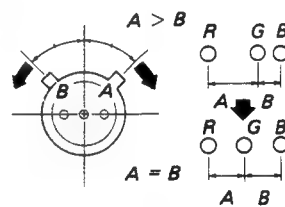
**HMC correction (A)****HMC correction (B)**

Fig. 1-8.

2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

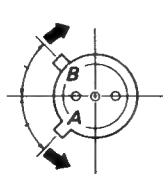
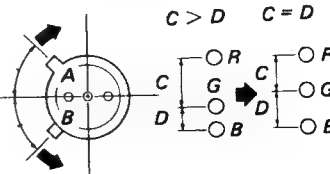
**VMC correction (A)****VMC correction (B)**

Fig. 1-9.

## [DYNAMIC CONVERGENCE]

### ● Convergence adjustment of 4:3 aspect picture.

1. ASPECT button on the HY board .....4:3
2. Adjust CONVERGENCE controls (RV1 ~ RV30) on the DC board as shown in Fig. 1-10.
3. It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move)
4. Adjust the convergence corresponding to the portion of the screen as follows.
5. Always match the convergence in the order of center → on Y axis → on X axis → corner against the screen.

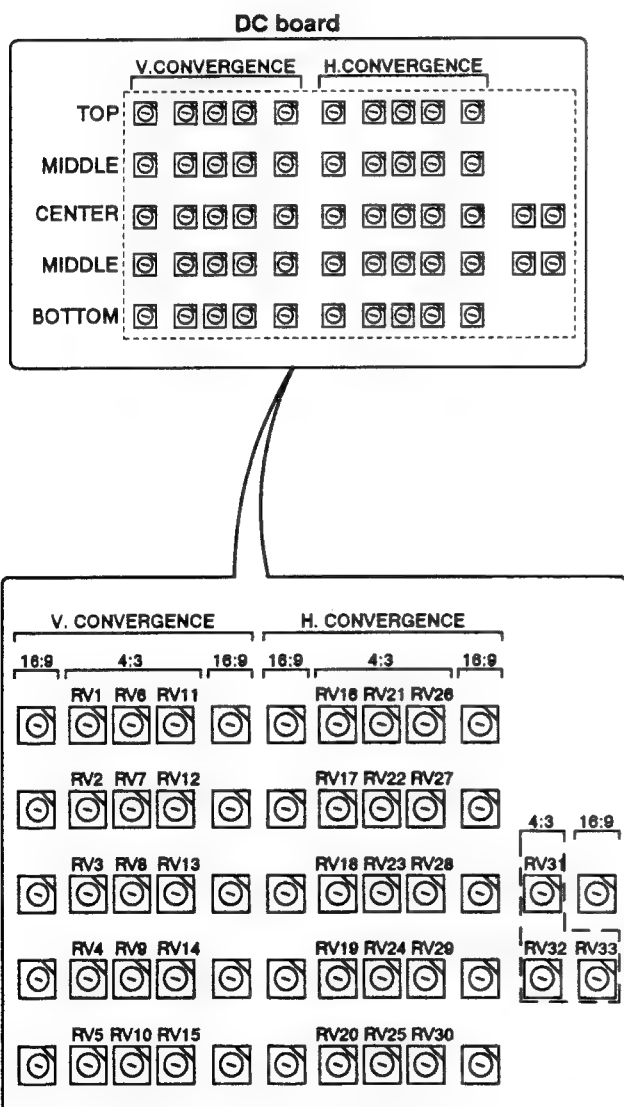


Fig. 1-10.

## [CONVERGENCE PROCESS]

1. UNDER SCAN switch ..... NOR (□)
2. Adjust RV23 and RV8 on the DC board to coincide with R, G and B dots at the center of the screen as shown in Fig. 1-11.

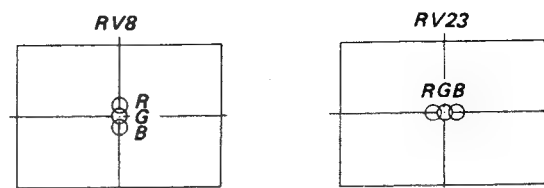


Fig. 1-11.

3. Adjust RV6, RV10, RV21 and RV25 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-12.

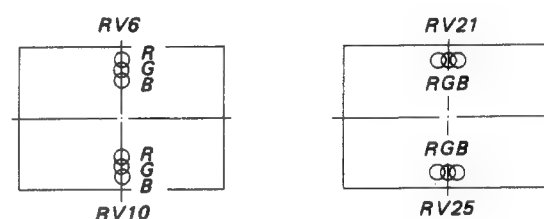


Fig. 1-12.

4. Adjust RV3, RV13 and RV18, RV28 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-13.

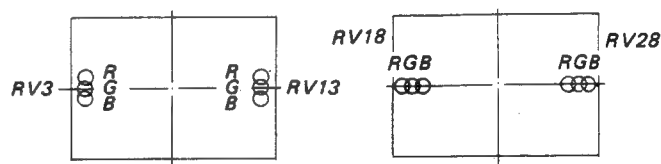


Fig. 1-13.

5. Adjust RV1, RV5 and RV11, RV15 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-14.

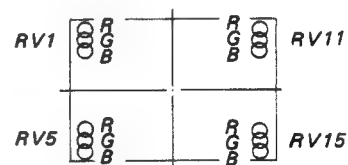


Fig. 1-14.

6. Adjust RV16, RV20 and RV26, RV30 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-15.

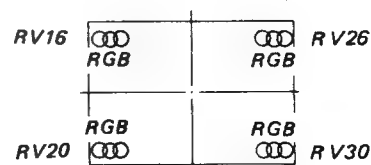


Fig. 1-15.

7. Adjust RV7, RV9 and RV22, RV24 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-16.

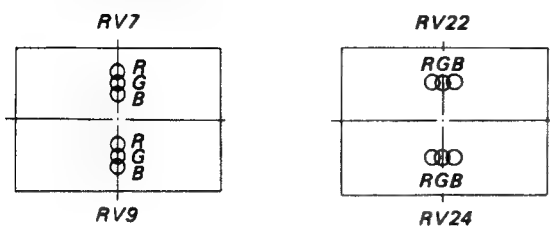


Fig. 1-16.

8. Adjust RV2, RV4 and RV12, RV14 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-17.

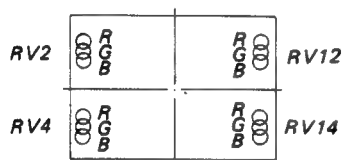


Fig. 1-17.

9. Adjust RV17, RV19 and RV27, RV29 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-18.

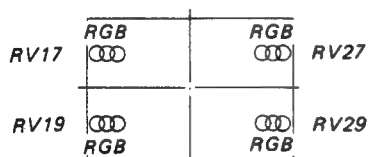


Fig. 1-18.

10. UNEDR SCAN switch . . . . . UNDER (⏏)

11. Adjust RV31 (UNDER SCAN Y. BOW) on the DC board to coincide with the R, G and B dots as shown in Fig. 1-19.

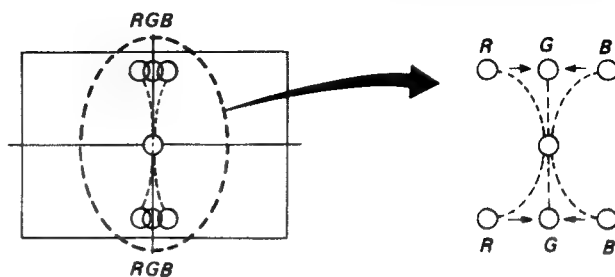


Fig. 1-19.

12. Adjust RV32 and RV33 (UNDER SCAN H. AMP) on the DC board to coincide with the R, G and B dots as shown in Fig. 1-20.

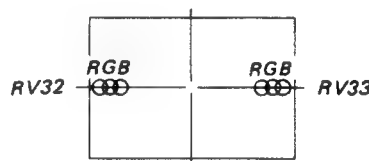
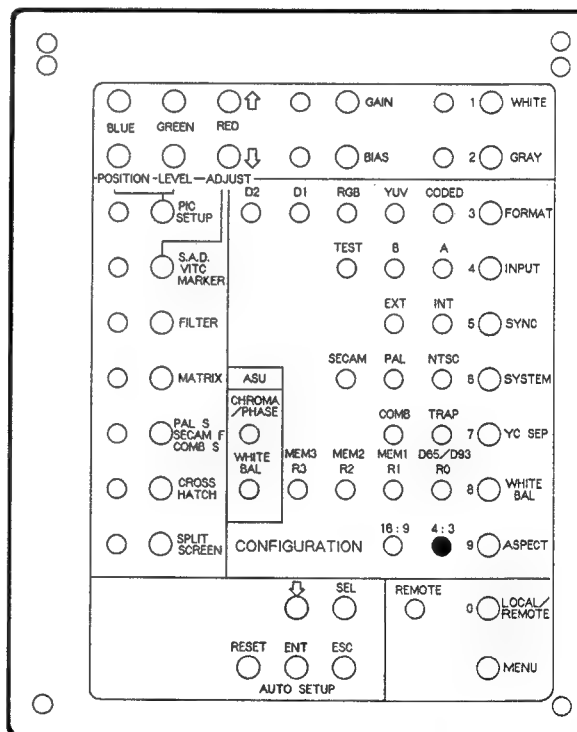
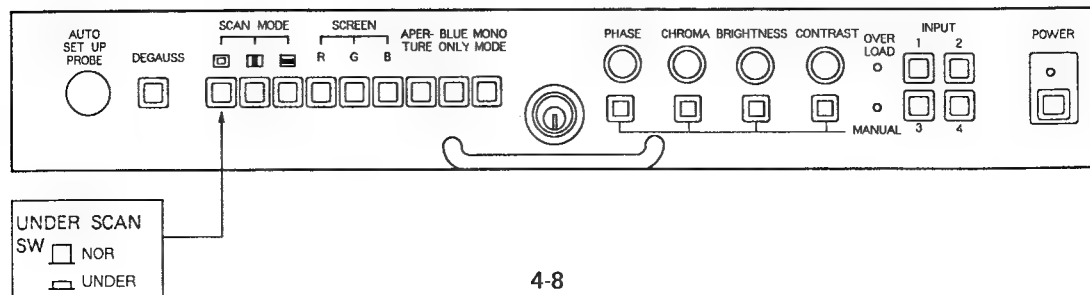


Fig. 1-20.

## SUB CONTROL PANEL (HY board)



## FRONT PANEL





● **Convergence adjustment of 16:9 aspect picture.**

1. ASPECT button on the HY board ..... 16:9
2. Adjust CONVERGENCE controls (RV41 ~ RV60) on the DC board as shown in Fig. 1-21.
3. It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move)
4. Adjust the convergence corresponding to the portion of the screen as follows.
5. Always match the convergence in the order of center → on Y axis → on X axis → corner against the screen.

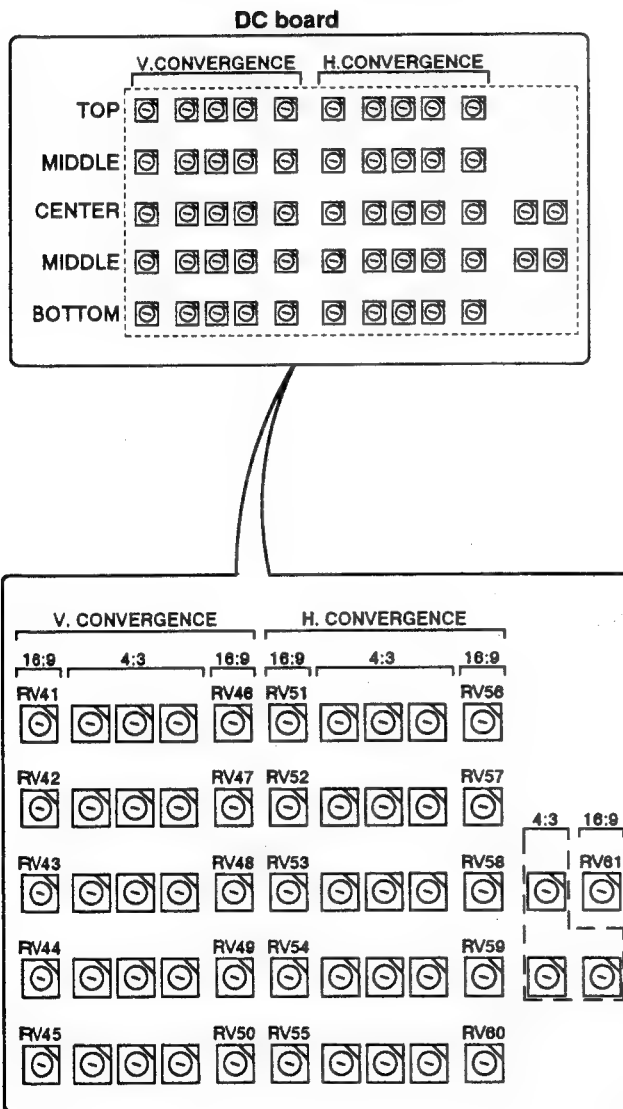


Fig. 1-21

**[CONVERGENCE PROCESS]**

1. UNDER SCAN switch ..... NOR (□)
2. Adjust RV43, RV48 and RV53, RV58 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-22.

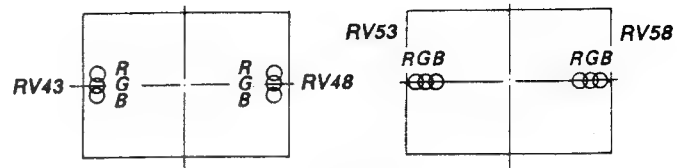


Fig. 1-22

3. Adjust RV41, RV45 and RV46, RV50 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-23.

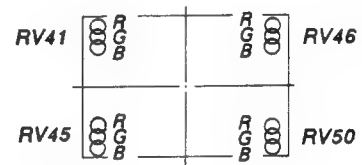


Fig. 1-23.

4. Adjust RV51, RV55 and RV56, RV60 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-24.

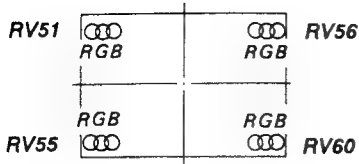


Fig. 1-24.

6. Adjust RV52, RV54 and RV57, RV59 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-26.

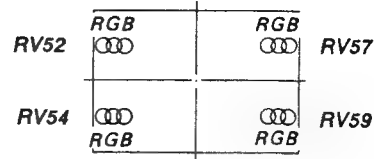


Fig. 1-26.

5. Adjust RV42, RV44 and RV47, RV49 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-25.

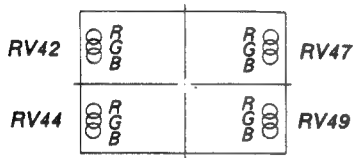


Fig. 1-25.

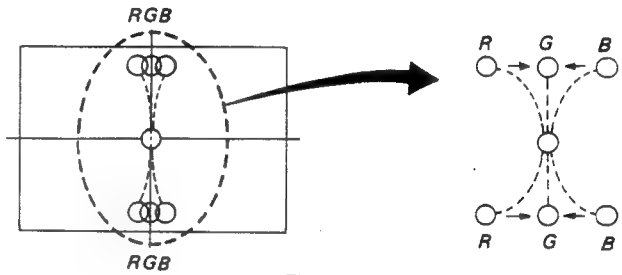
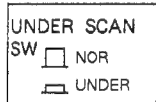
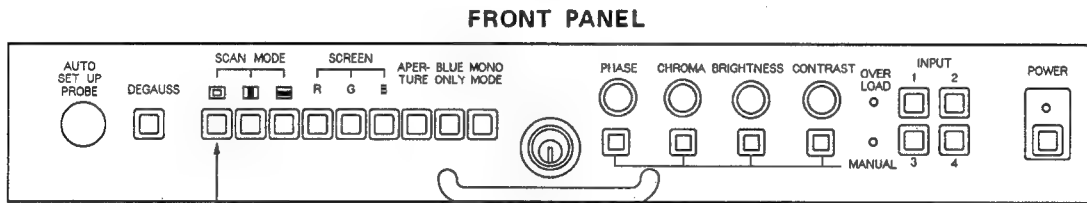
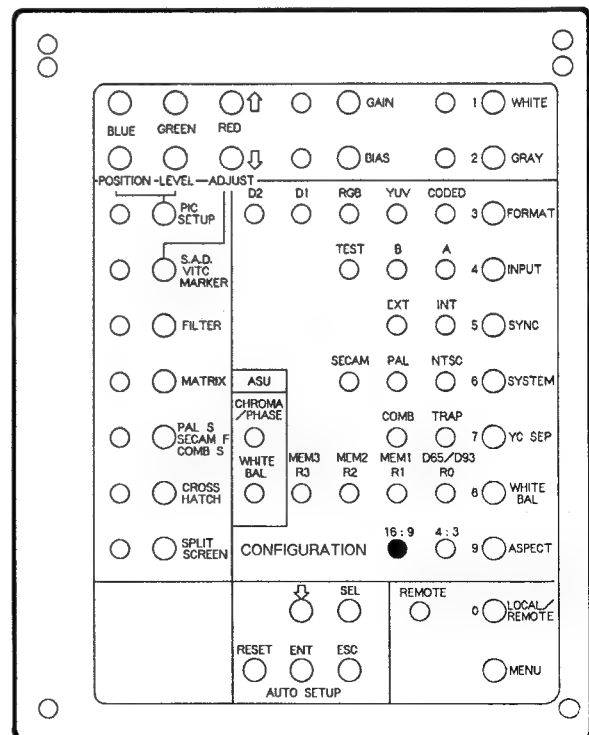


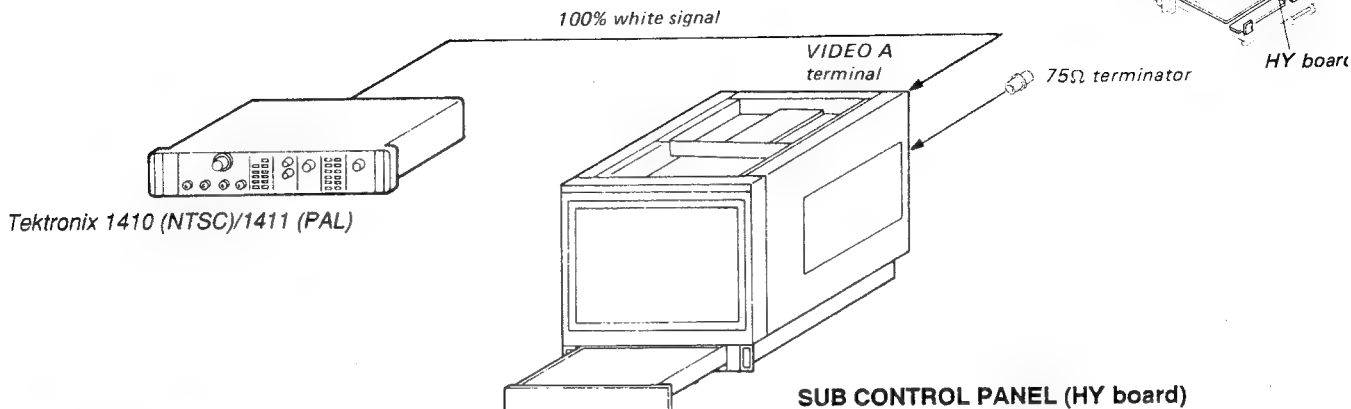
Fig. 1-27.



#### SUB CONTROL PANEL (HY board)

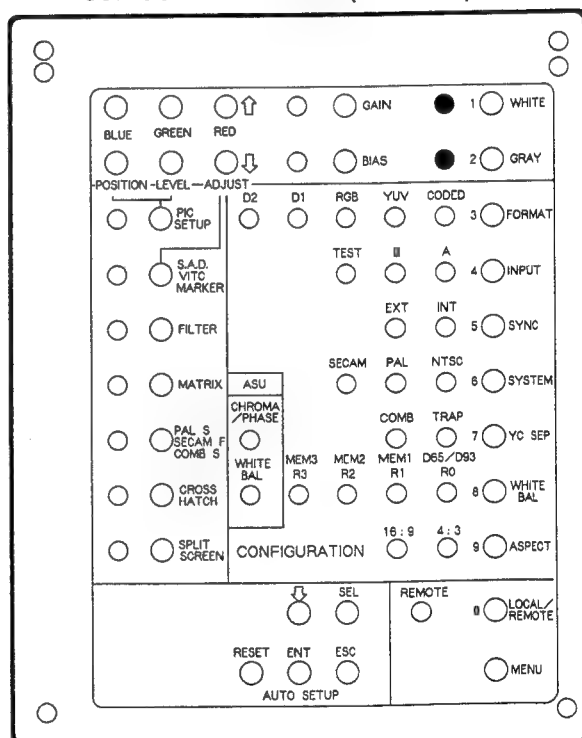


## WHITE BALANCE ADJUSTMENT

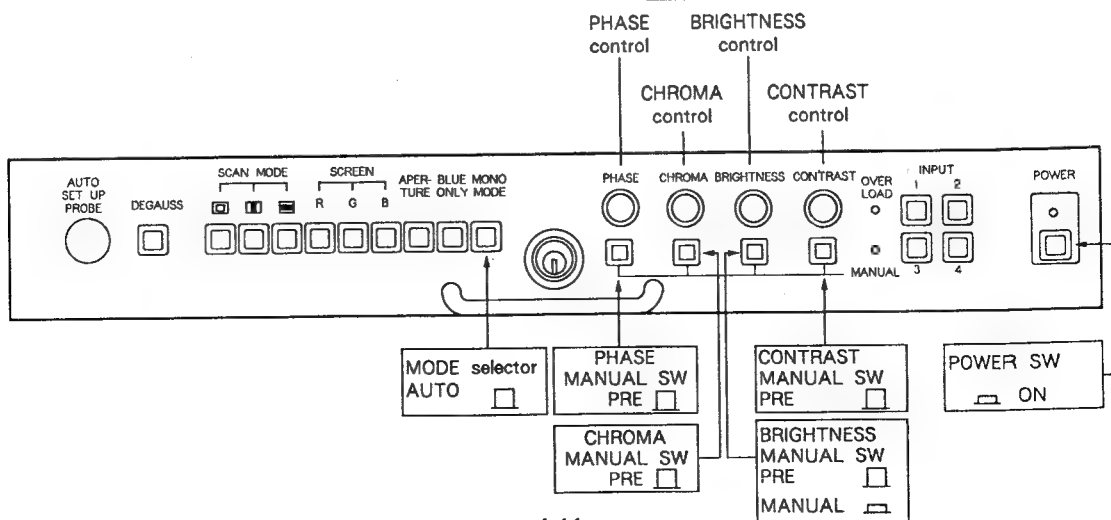


1. Input 100% white signal to VIDEO A connector.
2. Gray button ..... ON
3. BRIGHTNESS MANUAL switch ..... MANUAL. ( ☐ )  
CONTRAST MANUAL switch ..... MANUAL. ( ☐ )
4. Turn BRIGHT and CONTRAST to become 100 with PRESET MENU.  
SAVE the DATA.
5. Switch off the MANUAL switches of CONTRAST and BRIGHT.
6. Turn BIAS controls (S21:Red, S23:Green, S32:Blue) on the HY board to adjust the BRIGHTNESS to 0.5NIT and white balance using COLOR ANALYZER and check 0.5NIT by LUMINANCE METER.
7. White button ..... ON
8. Turn GAIN controls (S20:Red, S22:Green, S31:Blue) on The HY board to adjust the BRITHNESS at HIGH LIGHT to 103 NIT and white balance using COLOR ANALYZER and check 103 NIT by LUMINANCE METER.
9. Repeat procedure steps 6 to 8 if necessary.

SUB CONTROL PANEL (HY board)



FRONT PANEL





#### 4.6. SAFETY RELATED ADJUSTMENTS

##### B+ PROTECTOR (R52, R53)

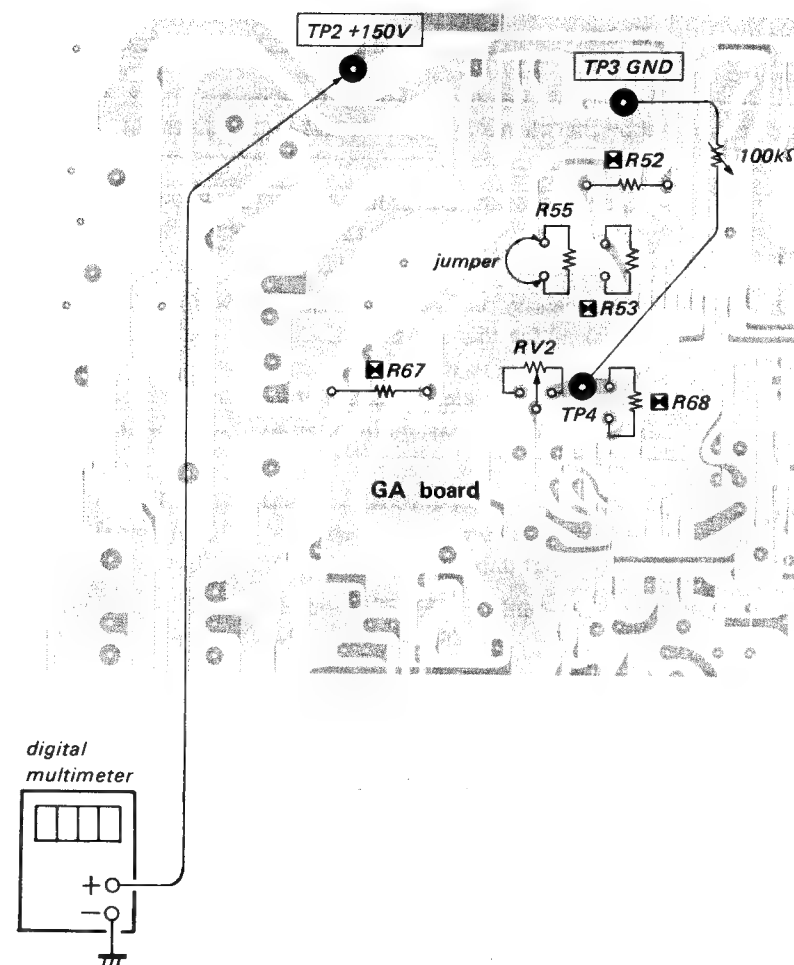
When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ GA Board . . Q13, Q14, R52, R53
- GB Board . . D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out  $\square$  )
2. Short-circuit R55 on GA Board.
3. Connect a 100k $\Omega$  variable resistor between TP4 and TP3 (GND) on GA board.
4. Confirm that the reading on the digital multimeter drops abruptly from +182.0V ~ +216.0V to 0V by turning the 100k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
5. If step 4 isn't satisfied, select resistance values of R52 and R53 which satisfy the specifications.
6. Restore these to their original states and confirm that the voltage at TP2 is 150.0  $\pm$  1.0V.



##### B+ MAX CONFIRMATION (R67, R68)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ GA Board . . C59, IC3, R67, R68, R78, RV2

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out  $\square$  )
2. Confirm that the reading on the digital multimeter is +165.0V  $\pm$  13.0V when RV2 variable resistor is turned to fully clockwise.
3. If the specifications are not met, select resistance values for R67 and R68 which satisfy the specifications.
4. After confirmation, make the reading on the digital multimeter into +150.0V  $\pm$  1.0V by adjusting RV2 on GA Board.

##### BEAM CURRENT PROTECTOR 1 CONFIRMATION

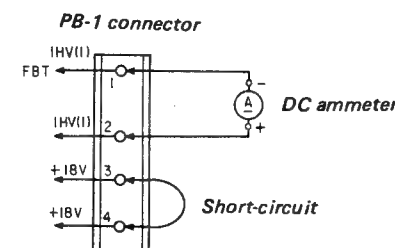
(R222)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- PA Board . . D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, R223, R224, R242

- PB Board . . FBT, R1, R2, R5

1. Remove the PB-1 connector from PB board.
2. Connect a DC ammeter between Pin ① and Pin ② of the PB-1 connector and short-circuit Pin ③ and Pin ④ with a jumper.



3. Connect a digital multimeter to TP2 and TP4 (GND) of PA board.
4. Select the built-in all-white signal (Set the WHITE/OPERATE/SET UP selector on HB board to WHITE). Don't do it in free run.
5. Confirm that the reading on the digital multimeter of TP2 on PA board is between +31.0V and +33.5V.
6. If the reading on the digital multimeter of TP2 is between +31.0V and +33.5V and more than 32.5V, mount a 1M $\Omega$ /4W resistor (metal-film) should be mounted at the portion of R222 on PA board. (Normally in this portion no component is mounted.)
7. Short-circuit R231 on PA board.
8. Short-circuit C1 on BI board.
9. Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm$  0.35mA.
10. Remove the short-circuit from R231 and C1 and restore the PB-1 connector to its original state.
11. Remove the jumpers and DC ammeter and reconnect the PB-1 connector.
12. Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD Lamp Lights up).

4. Select the built-in all-white signal (Set the WHITE/OPERATE/SET UP selector on HB board to WHITE). Don't do it in free run.
5. Confirm that the reading on the digital multimeter of TP3 on PA board is between +31.0V and +33.5V.
6. If the reading on the digital multimeter of TP3 is between +31.0V and +33.5V and more than 32.5V, mount a 1M $\Omega$ /4W resistor (metal-film) should be mounted at the portion of R239 on PA board. (Normally in this portion no component is mounted.)
7. Short-circuit R213 on PA board.
8. Short-circuit C1 on BI board.
9. Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm$  0.35mA.
10. Remove the short-circuit from R213 and C1 and restore the PB-1 connector to its original state.
11. Remove the jumpers and DC ammeter and reconnect the PB-1 connector.
12. Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD lamp lights up).

##### BEAM CURRENT PROTECTOR 2

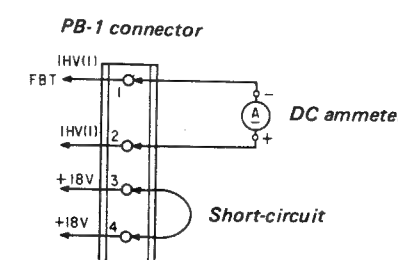
(R239)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

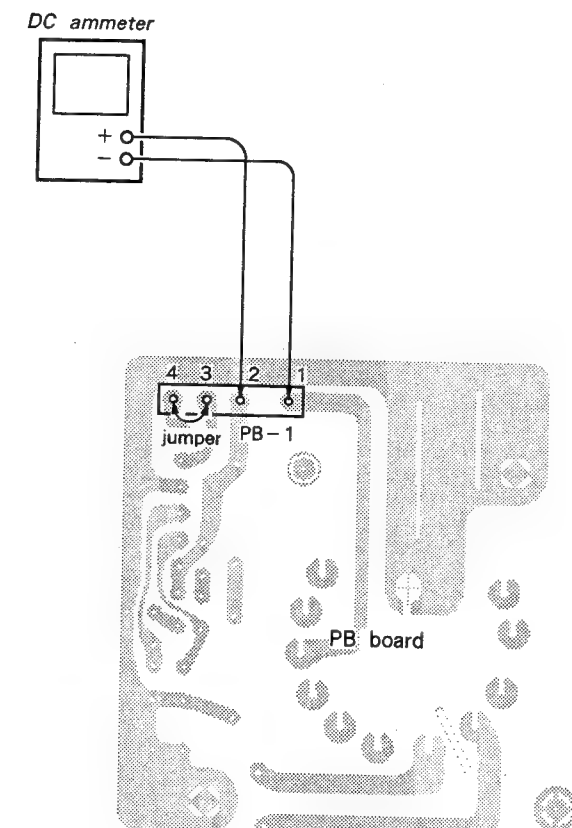
- ☒ PA Board . . D204, D216, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247, IC3

- PB Board . . R3, R4, R6, FBT

1. Remove the PB-1 connector from PB board.
2. Connect a DC ammeter between Pin ① and Pin ② of the PB-1 connector and short-circuit Pin ③ and Pin ④ with a jumper

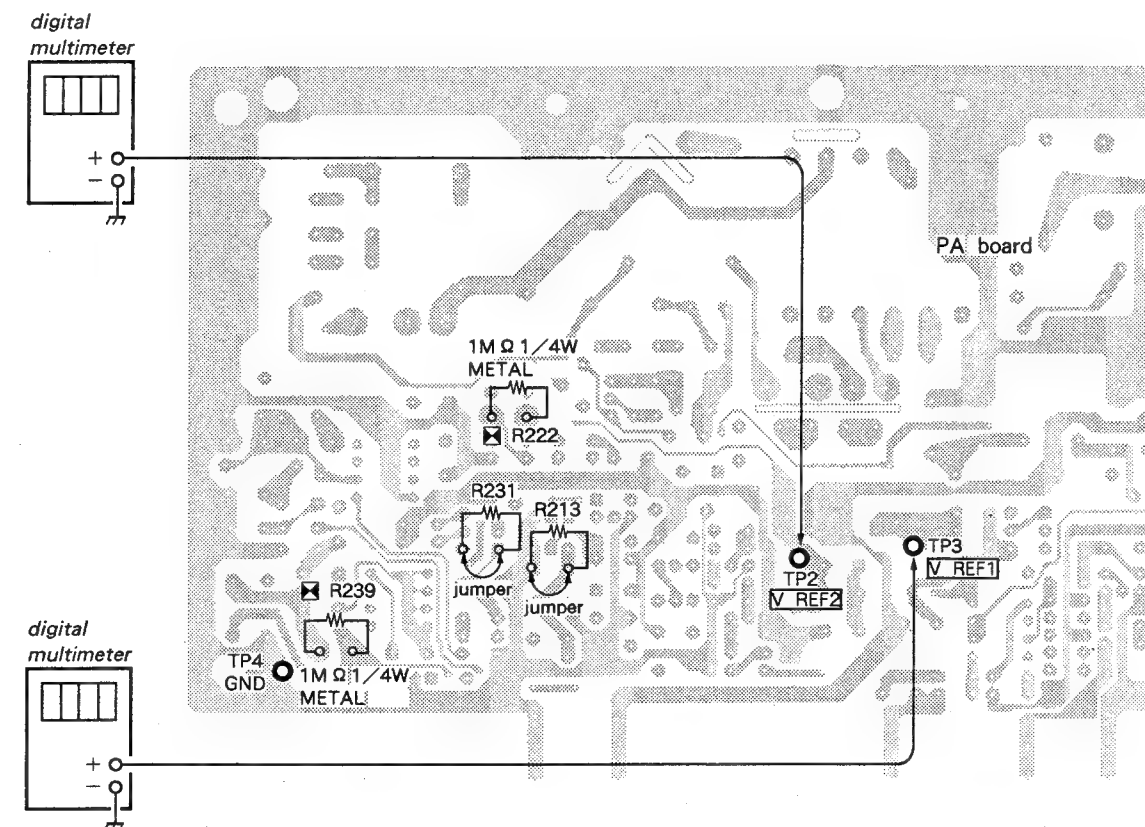


3. Connect a digital multimeter to TP3 and TP4 (GND) of PA board.



3. Connect a digital multimeter to TP2 and TP4 (GND) of PA board.
4. Select the built-in all-white signal (Set the WHITE/OPERATE/SET UP selector on HB board to WHITE). Don't do it in free run.
5. Confirm that the reading on the digital multimeter of TP2 on PA board is between +31.0V and +33.5V.
6. If the reading on the digital multimeter of TP2 is between +31.0V and +33.5V and more than 32.5V, mount a 1M $\Omega$ /4W resistor (metal-film) should be mounted at the portion of R222 on PA board. (Normally in this portion no component is mounted.)
7. Short-circuit R231 on PA board.
8. Short-circuit C1 on BI board.
9. Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm$ 0.35mA.
10. Remove the short-circuit from R231 and C1 and restore the PB-1 connector to its original state.
11. Remove the jumpers and DC ammeter and reconnect the PB-1 connector.
12. Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD Lamp Lights up).

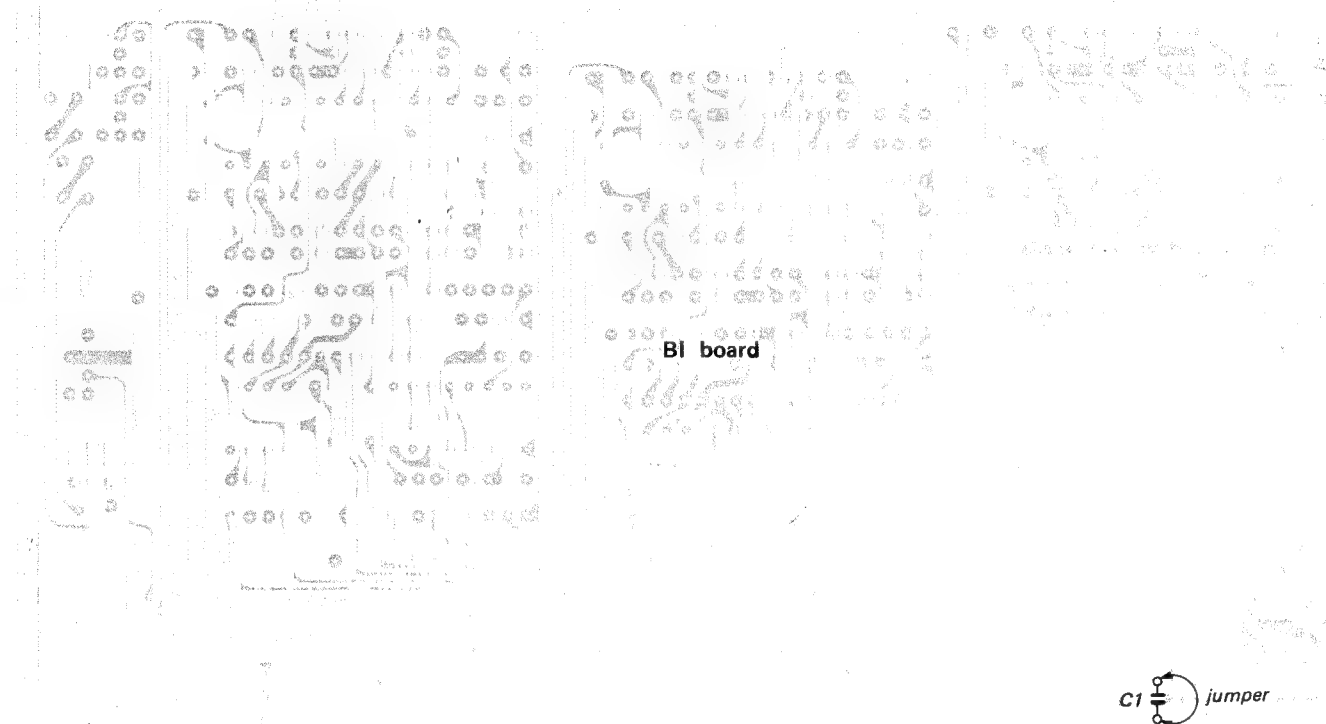
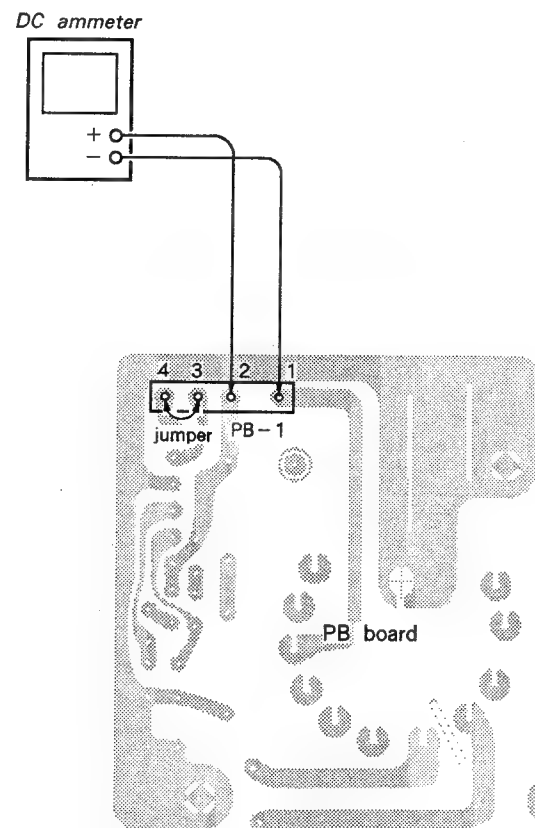
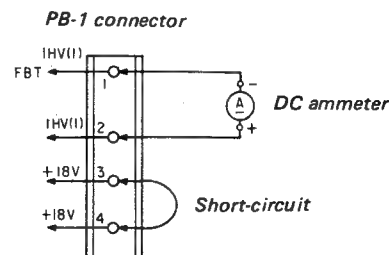
4. Select the built-in all-white signal (Set the WHITE/OPERATE/SET UP selector on HB board to WHITE). Don't do it in free run.
5. Confirm that the reading on the digital multimeter of TP3 on PA board is between +31.0V and +33.5V.
6. If the reading on the digital multimeter of TP3 is between +31.0V and +33.5V and more than 32.5V, mount a 1M $\Omega$ /4W resistor (metal-film) should be mounted at the portion of R239 on PA board. (Normally in this portion no component is mounted.)
7. Short-circuit R213 on PA board.
8. Short-circuit C1 on BI board.
9. Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm$ 0.35mA.
10. Remove the short-circuit from R213 and C1 and restore the PB-1 connector to its original state.
11. Remove the jumpers and DC ammeter and reconnect the PB-1 connector.
12. Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD lamp lights up).



#### BEAM CURRENT PROTECTOR 2 (R239)

When replacing the following components (marked  $\blacksquare$  on the schematic diagram), make this confirmation.

- PA Board . . D204, D216, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247, IC3
  - PB Board . . R3, R4, R6, FBT
1. Remove the PB-1 connector from PB board.
  2. Connect a DC ammeter between Pin ① and Pin ② of the PB-1 connector and short-circuit Pin ③ and Pin ④ with a jumper.



# **HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION**

(☒ R227, R228)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

☒ DCT block

PA Board . . D205, D207, D215, IC2, R201, R202, R213, R214, R225, R226, R227, R228, R243, R245

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeter to ⑦. pin of IC4 on PA Board.

## **In case of using an electrostatic voltmeter**

1. Connect the electrostatic voltmeter to the anode cap and connect a digital multimeter to TP1 and TP4 (GND) on PA board.

**Note:** Use an electrostatic multimeter which is calibrated and which has  $2 \times 10^9 \Omega$  or more input impedance. (Example: ESH-27X or ESH-23X of the SINGER COMPANY)

Use a digital multimeter which has 4 digits or more.

2. Receive a color bar signal and set the CONTRAST and BRIGHTNESS controls to the preset positions. (manual switch is OUT.)
3. Determine the values of R227 and R228 as to get voltage of  $9.55 \pm 0.13V$  at TP1.
4. Connect 500k $\Omega$  variable resistor with R126 in parallel on PA board.
5. Confirm that the reading on the electrostatic voltmeter drops abruptly from 28.0kV ~ 30.0kV to 0V by turning slowly the 500k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
6. Remove the 500k $\Omega$  variable resistor from R126 and confirm again that the voltage of the anode is 27.0kV  $\pm 0.1kV$ .

## **In case of not using an electrostatic voltmeter (using a digital multimeter.)**

1. Connect the digital multimeter to TP1 and TP4 (GND) and to Pin ⑦ of IC4 and TP4 (GND).
2. Receive a color bar signal and set the CONTRAST and BRIGHTNESS controls to the preset positions.
3. Determine the values of R227 and R228 as to get voltage of  $9.40 \pm 0.13V$  at TP1.
4. Connect 500k $\Omega$  variable resistor with R126 in parallel on PA board.
5. Confirm that the raster disappears when the voltage at Pin ⑦ of IC4 reaches  $9.40 \pm 0.13V$  by turning slowly the 500k $\Omega$  variable resistor so that the value of the resistor decrease from maximum value.
6. Remove the 500k $\Omega$  variable resistor from R126.

# **HIGH V TION**

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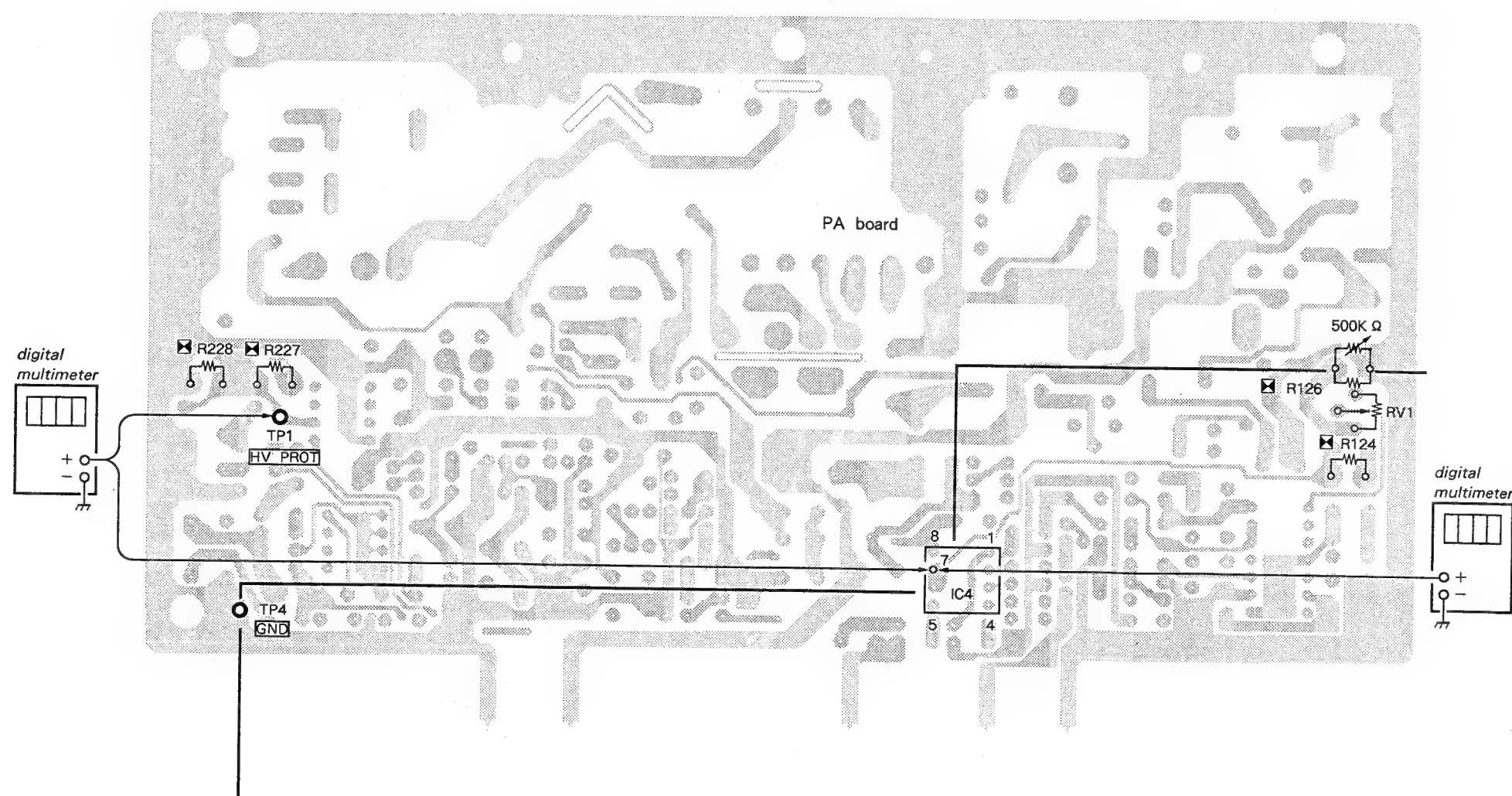
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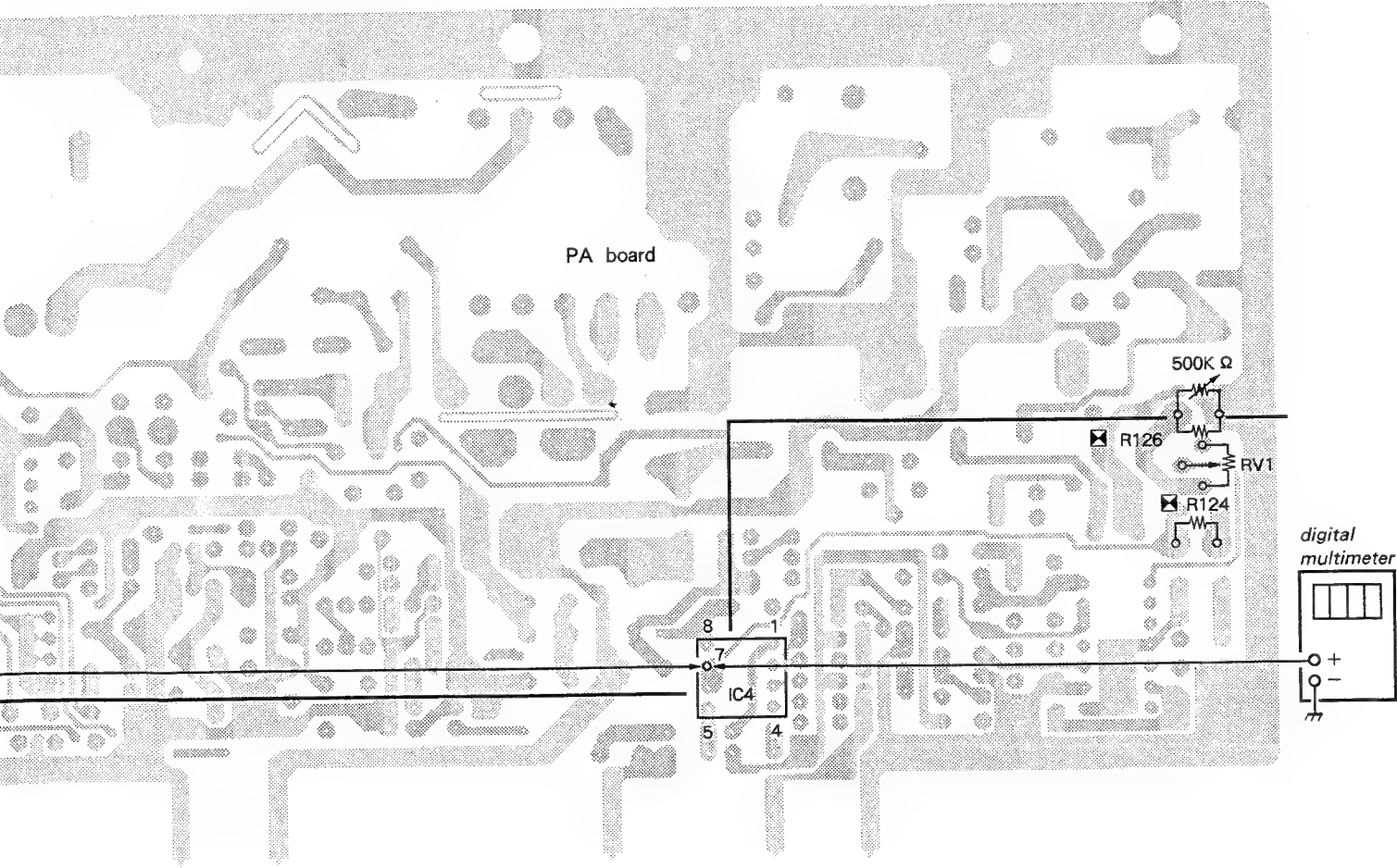





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27 and R228 as to get vol-  
sistor with R126 in parallel

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)  $\pm 0.13V$  by turning slowly  
so that the value of the re-  
um value.  
e resistor from R126.



HIGH VOLTAGE REGULATOR CONFIRMATION

When replacing the following components (marked  on the schematic diagram), make this adjustment.

-  DCT block
- PA Board . . D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1


It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap. Even though an electrostatic voltmeter may not be used, connect digital multimeter to ⑦ pin of IC4 on PA Board.


**Note:** Use an electrostatic voltmeter which is calibrated, and which has  $2 \times 10^9 \Omega$  or more input impedance.

example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.


• In case of using an electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual switch is out  )

(  R124, R126)

2. Turn RV1 on the PA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the indicated value on the electrostatic voltmeter is  $27.40kV \pm 0.1kV$  at this time.
4. If necessary, select the value of R124 and R126 (1/4W metal-film) and repeat above step 2 through 4.
5. After confirmation, adjust RV1 for  $27.0kV \pm 0.1kV$  on the electrostatic voltmeter.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual switch is out  )
2. Connect the digital multimeter to Pin ⑦ of IC4 and TP4 (GND) on PA board.
3. Set RV1 on PA board to its mechanical center.
4. Select resistance values for R124 and R126 which provide a voltage reading of  $8.75V \pm 0.1V$  at Pin ⑦ of IC4 and mount.



#### 4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

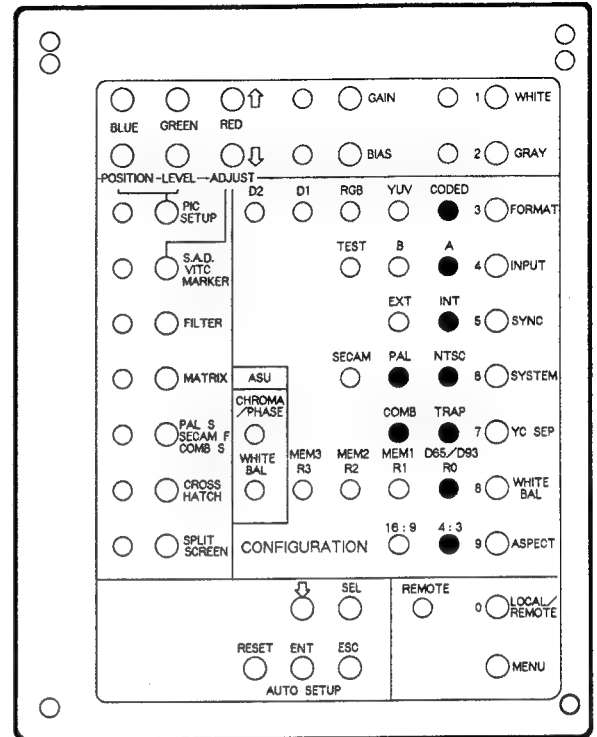
##### FRONT PANEL

- INPUT selector ..... 1
- CONTRAST MANUAL switch ..... PRESET
- BRIGHTNESS MANUAL switch ..... PRESET
- CHROMA MANUAL switch ..... PRESET
- PHASE MANUAL switch ..... PRESET
- SCAN MODE switch
- UNDER SCAN ..... NOR
- H. DELAY ..... NOR
- V. DELAY ..... NOR
- SCREEN switch (R) ..... NOR
- SCREEN switch (G) ..... NOR
- SCREEN switch (B) ..... NOR
- APT switch ..... NOR
- BLUE ONLY switch ..... NOR
- MODE selector ..... AUTO

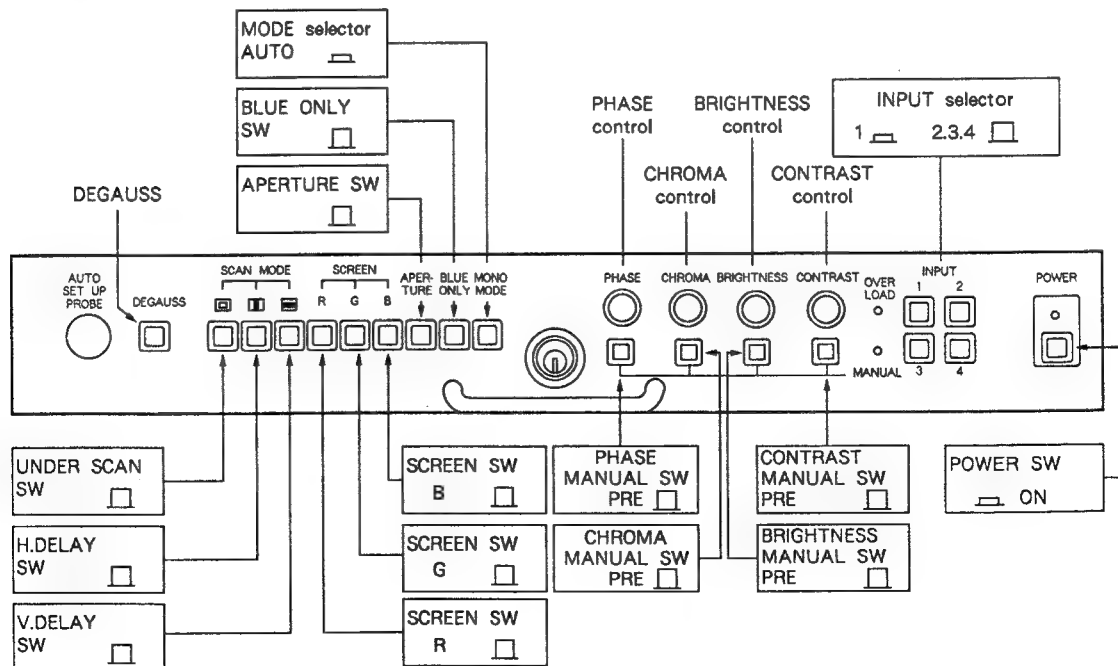
##### SUB CONTROL PANEL

- FORMAT button ..... CODED
- INPUT button ..... A
- SYNC button ..... INT
- COLOR SYSTEM button ..... NTSC (BVM-1311/1911)  
PAL (BVM-1411P/2011P)
- YC SEP button ..... COMB (BVM-1311/1911)  
TRAP (BVM-1411P/2011P)
- WHITE BALANCE button ..... D65/D93
- ASPECT button ..... 4 : 3
- PIC SETUP button ..... OFF
- SAD/VITC/MARKER button ..... OFF
- FILTER button ..... OFF
- MATRIX button ..... OFF
- PAL S/SECAM F/COMB S button ..... OFF
- CROSS HATCH button ..... OFF
- SPLIT SCREEN button ..... OFF
- WHITE button ..... OFF
- GRAY button ..... OFF
- AFC switch ..... 2m sec

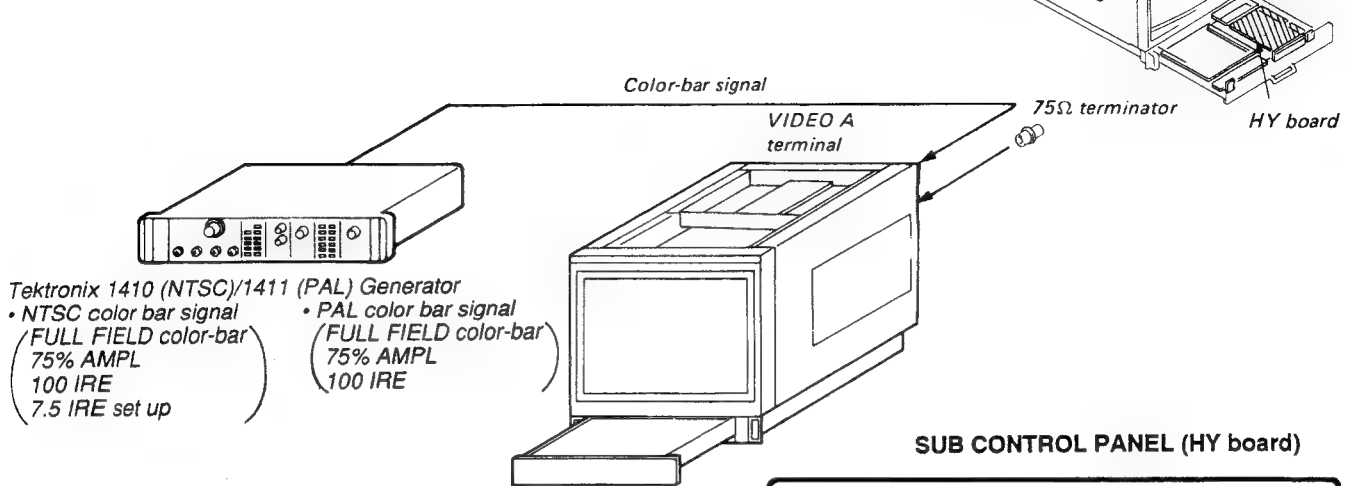
##### SUB CONTROL PANEL (HY board)



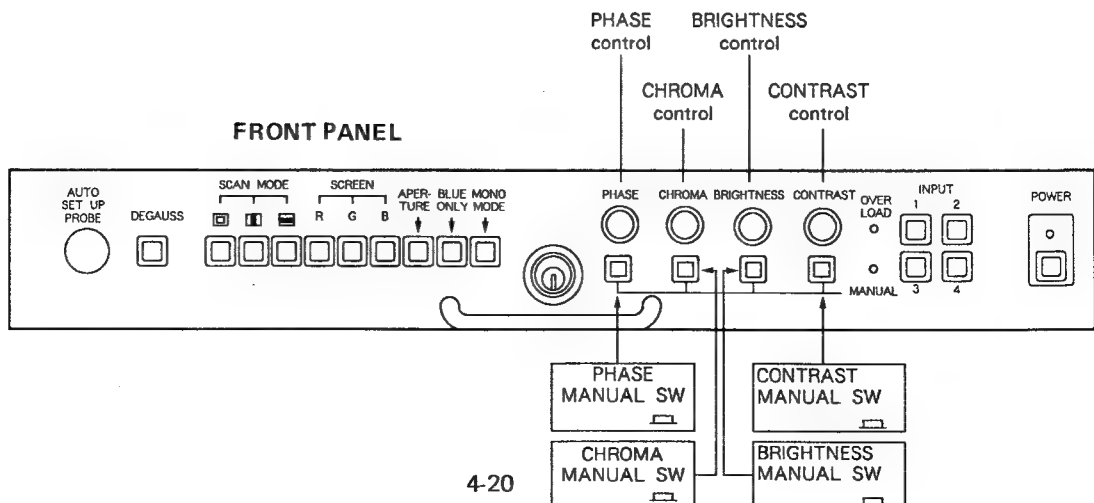
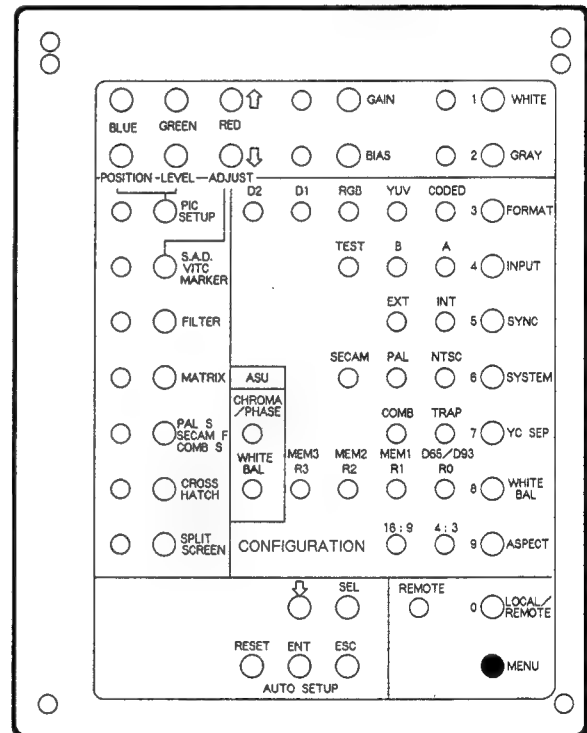
##### FRONT PANEL



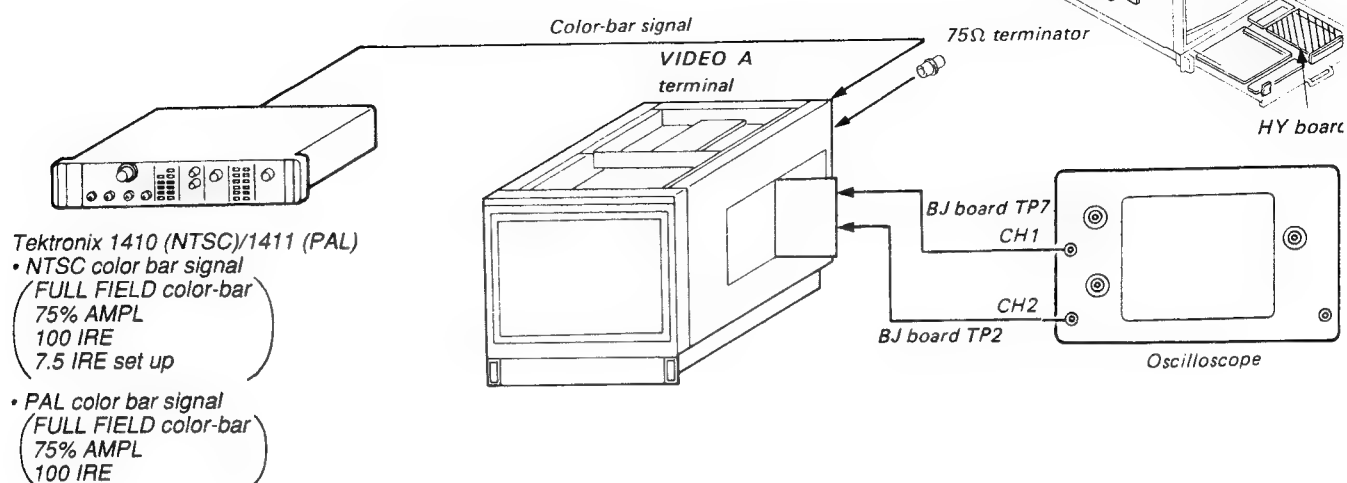
## 1. SUB CHROMA, SUB PHASE ADJUSTMENT



1. Press the MENU switch to select the PRESET menu.
2. CONTRAST, BRIGHT, CHROMA, PHASE MANUAL switch (FRONT PANEL).....MANUAL
3. Turn each volume control to adjust so that the value on the screen becomes 100.
4. Save the DATA.



## 2. BJ Board BRT PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

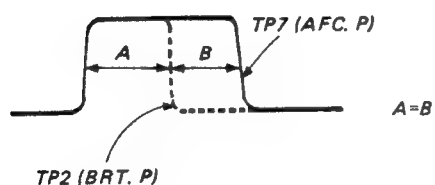
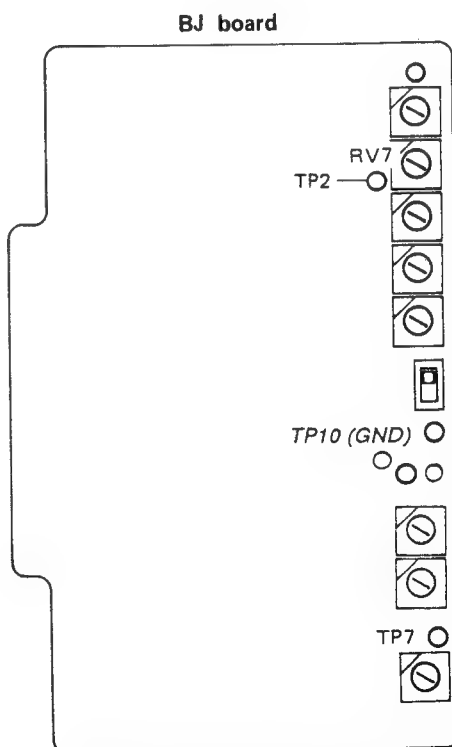
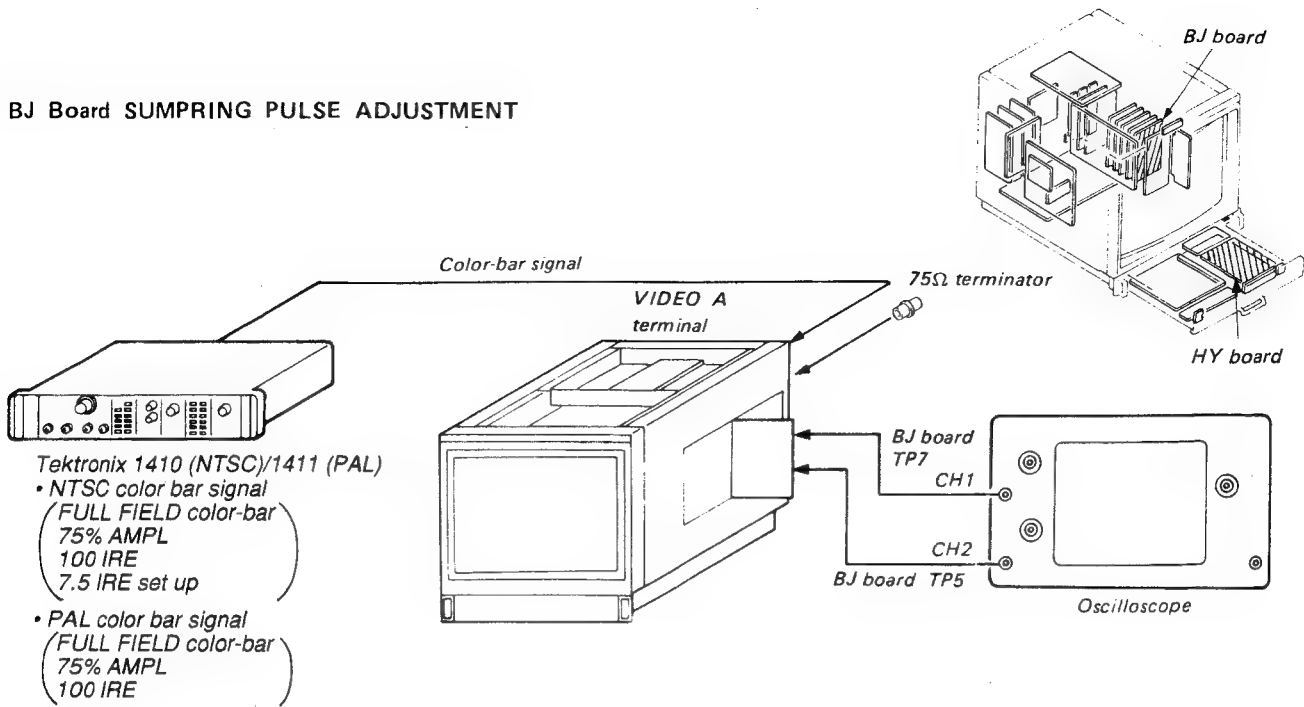


Fig. 2-1



## BJ Board SUMPRING PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

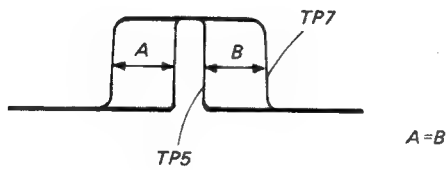
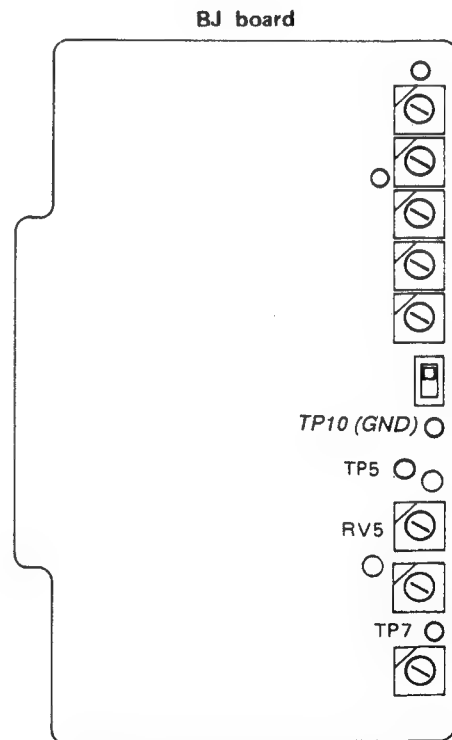
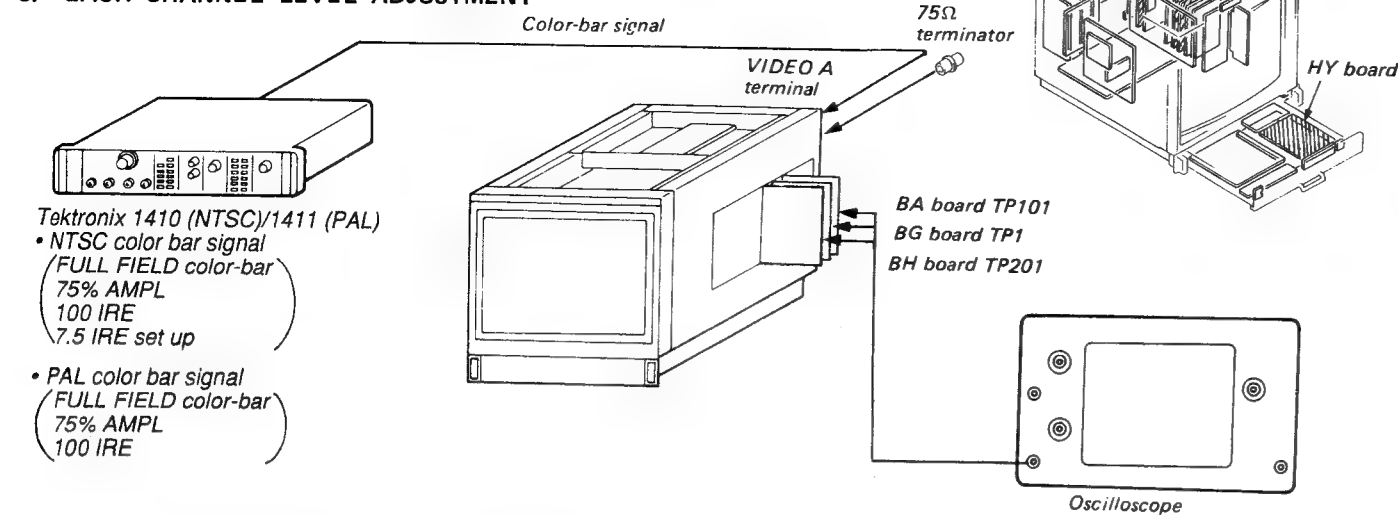


Fig. 2-2



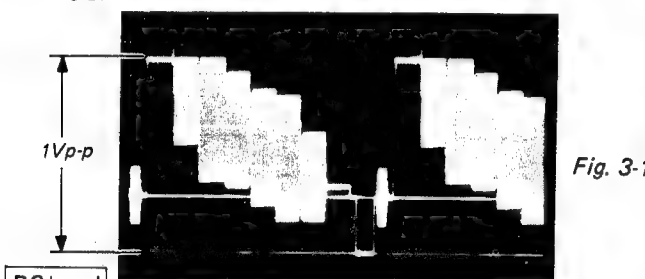
### 3. EACH CHANNEL LEVEL ADJUSTMENT



- FILTER button (SUB CONTROL PANEL) ..... OFF
- MODE selector (FRONT PANEL) ..... MONO ( )
- INPUT selector (FRONT PANEL) ..... 1 ( )

#### BA board

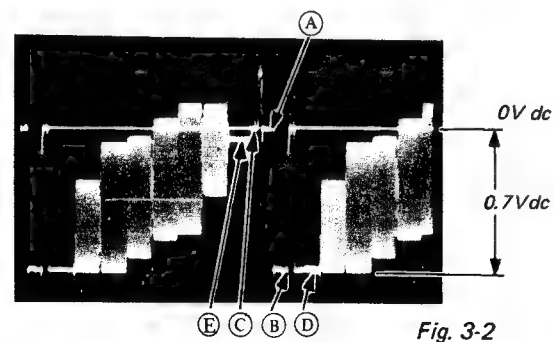
1. Input a color-bar signal to VIDEO A terminal to the set.
2. Connect an oscilloscope to the TP101 of BA board.
3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.



#### BG board

4. Connect an oscilloscope to the TP1 of BG board.
5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
6. Connect an oscilloscope to the TP201 of BH board.

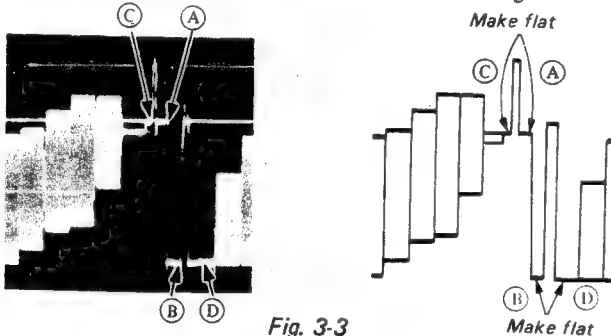
7. Adjust FRONT BRT VR so that (A) (black level) is 0V DC as shown in Fig. 3-2.
8. Adjust FRONT CONT VR so that (B) (100% white level) is -0.7V DC as shown in Fig. 3-2.



- (A) ..... Black level
- (B) ..... 100% White level
- (C) ..... 0 IRE level
- (D) ..... 100 IRE level
- (E) ..... 7.5 IRE level

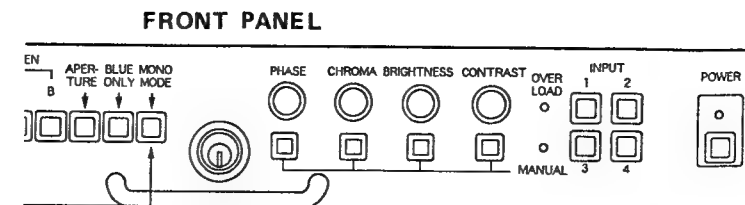
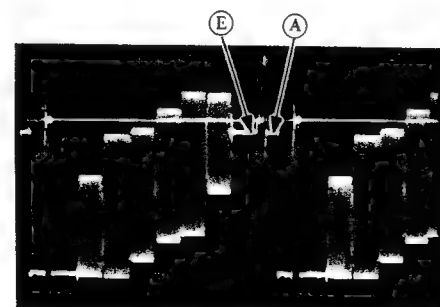
#### BH board

9. S2 (BH Board) ..... 0 IRE  
Adjust RV1 of BH board so that the (C) (0 IRE level) coincides with (A) (Black level) as shown in Fig. 3-3.
10. Adjust RV3 of BH board so that the (D) (100 IRE level) coincides with (B) (100% white level) as shown in Fig. 3-3.

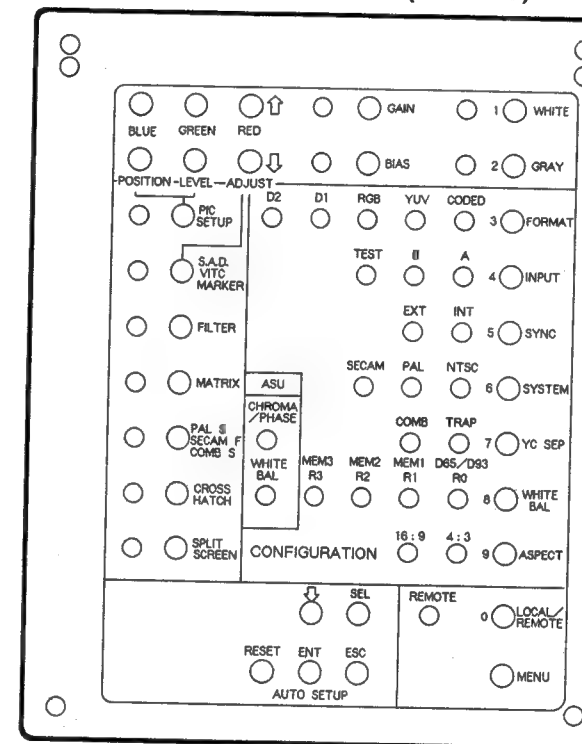


#### BH board

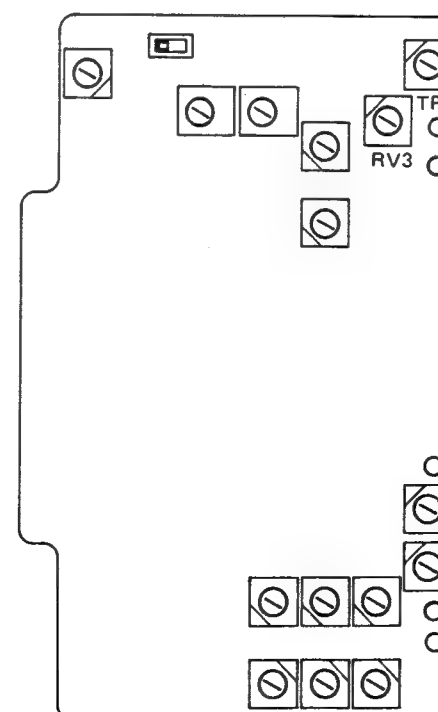
11. S2 (BH Board) ..... 7.5 IRE  
Adjust RV2 of BH board so that the (E) (7.5 IRE level) coincides with (A) (Black level) as shown in Fig. 3-4.
12. Set S2 (BH Board) to AUTO.



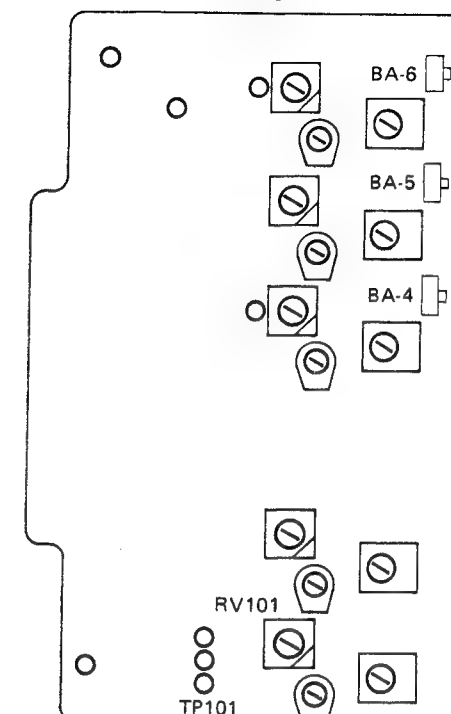
#### SUB CONTROL PANEL (HY board)



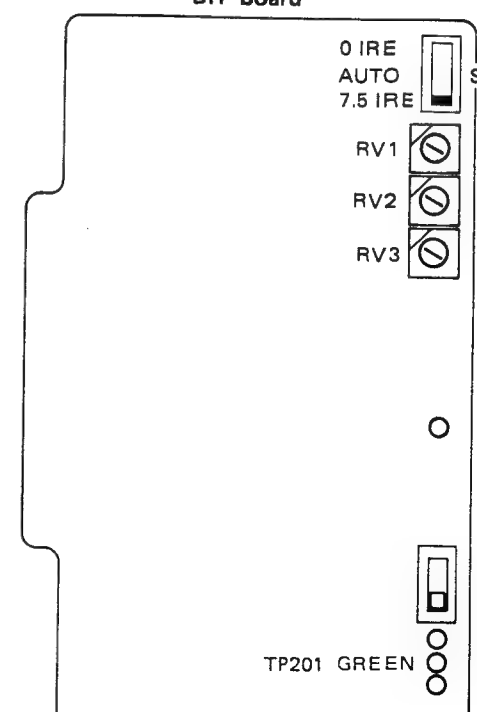
#### BG board



#### BA board

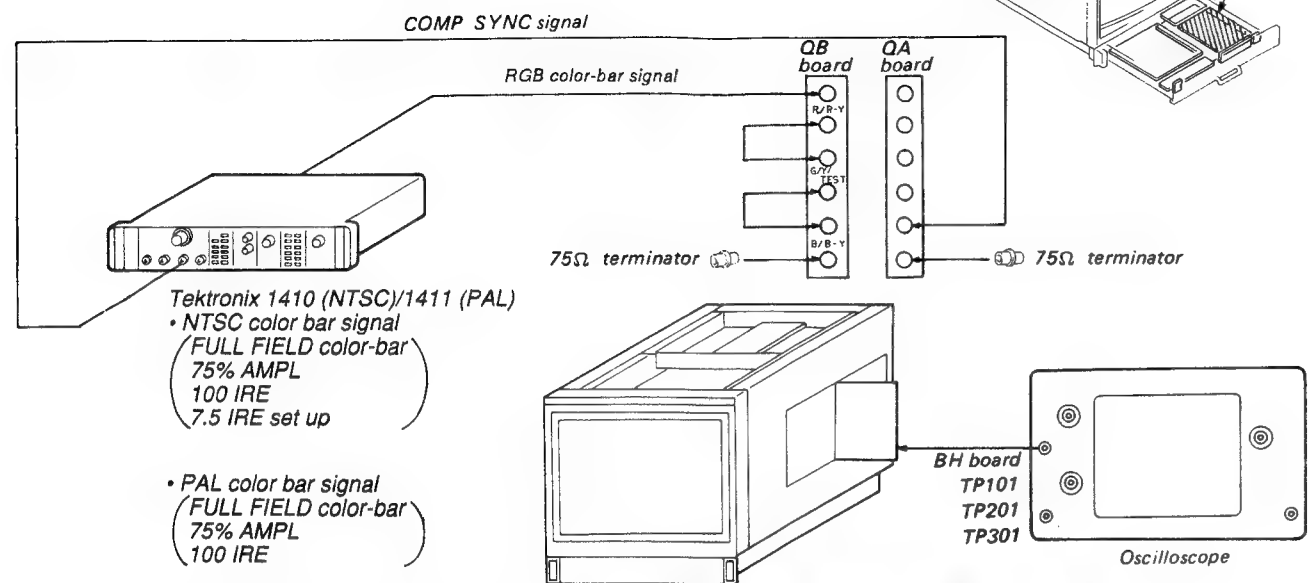


#### BH board

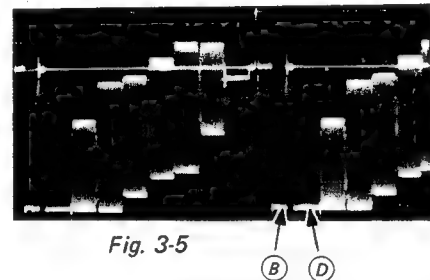


# BA board

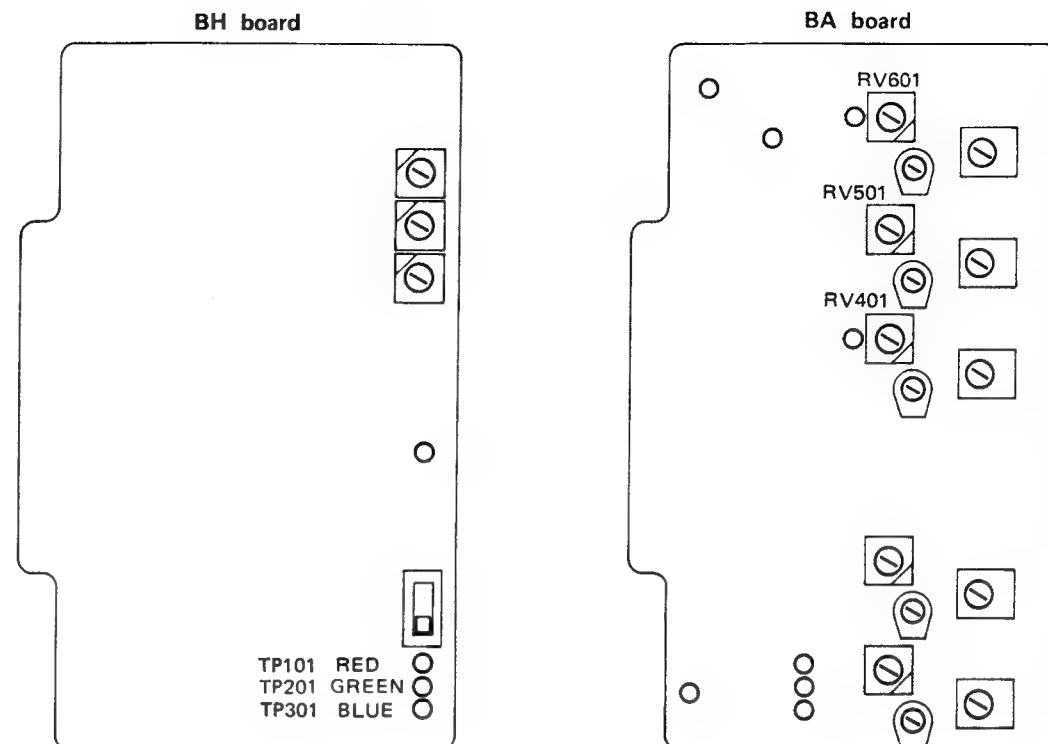
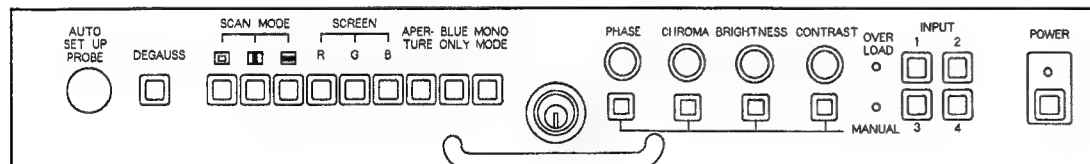
13. Input a color-bar signal to RGB input terminal of the set.
  - SYNC button (SUB CONTROL PANEL).....EXT
  - FORMAT button (SUB CONTROL PANEL).....RGB



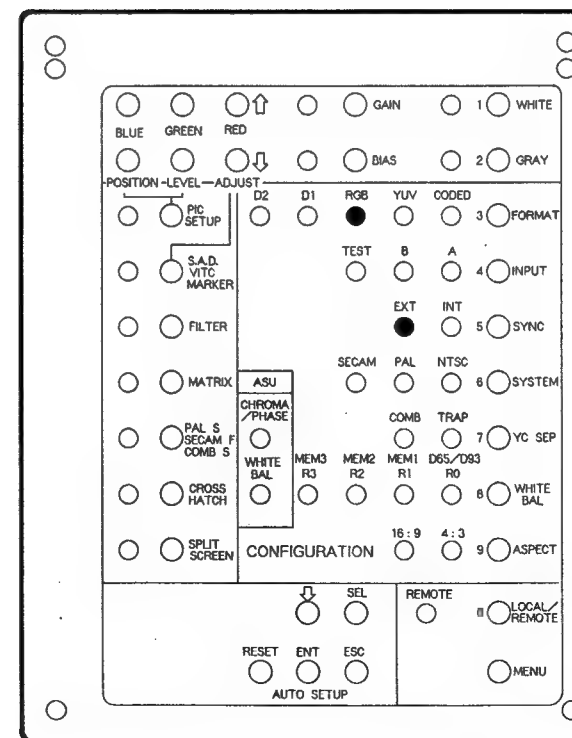
14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.



## FRONT PANEL



## SUB CONTROL PANEL (HY board)



#### 4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

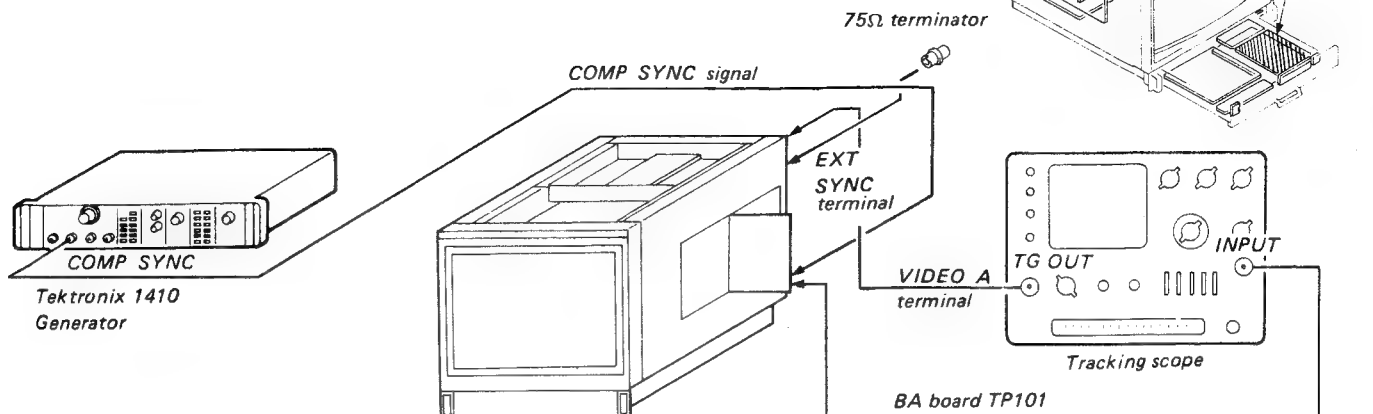


Fig. 4-1

- Complete the connection as shown in Fig 4-1.
  - FORMAT button (SUB CONTROL PANEL) ..... CODED
  - INPUT selector (FRONT PANEL) ..... 1
  - SYNC button (SUB CONTROL PANEL) ..... EXT
  - CONTRAST control (FRONT PANEL) ..... Minimum
  - BRIGHTNESS control (FRONT PANEL) ..... Minimum
- Adjust CV101 so that minimum as shown in Fig. 4-2.

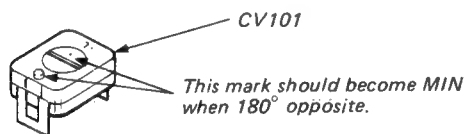


Fig. 4-2

- Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.

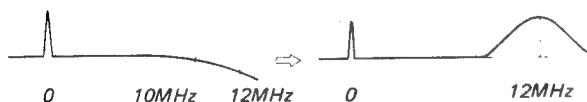


Fig. 4-3

- Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

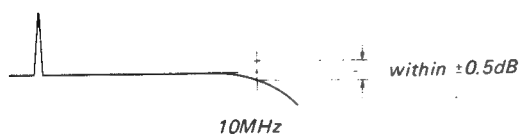
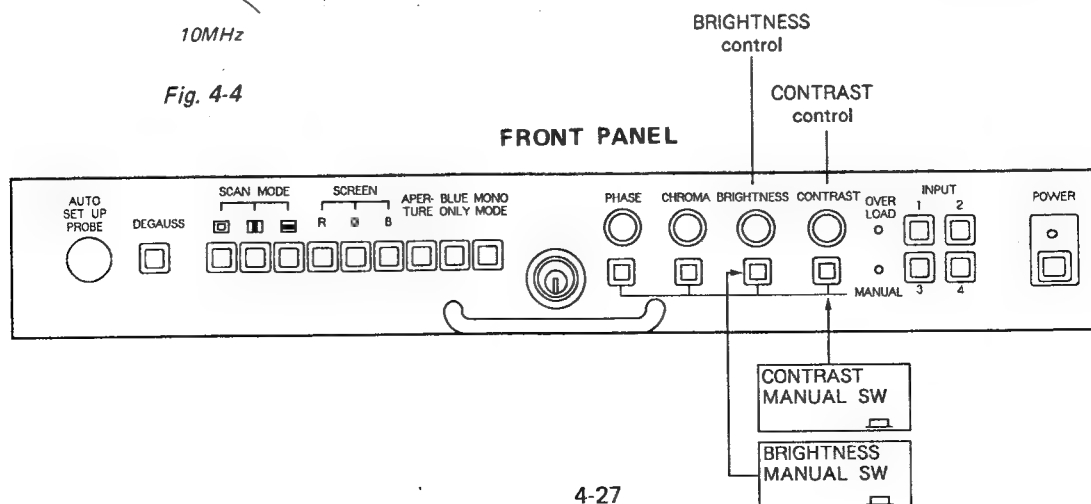


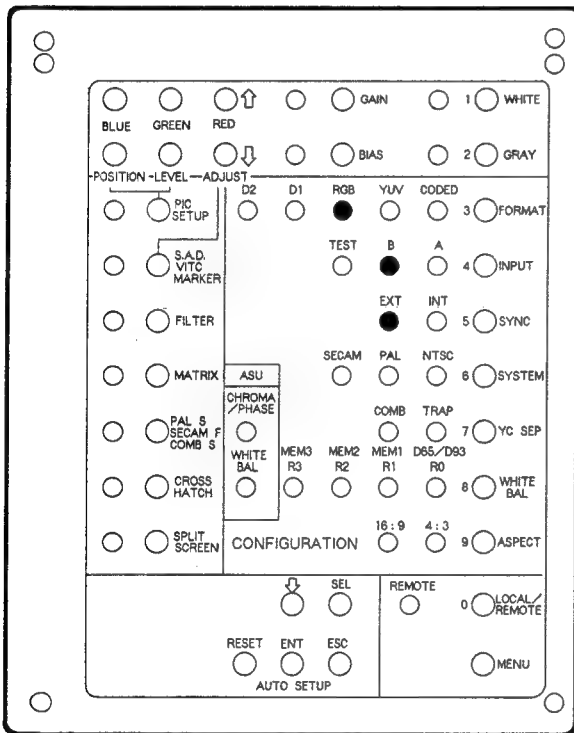
Fig. 4-4



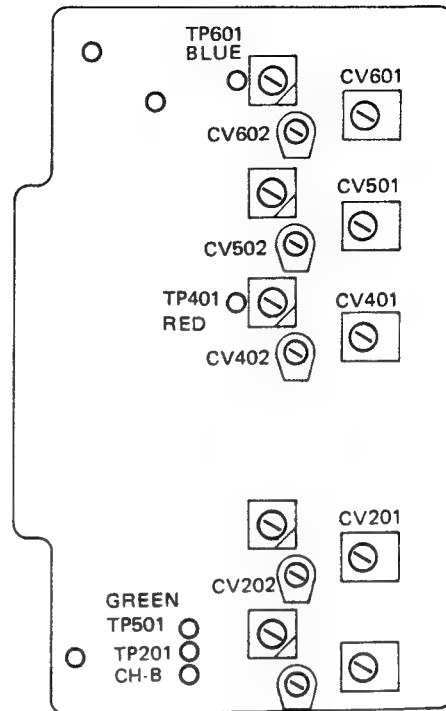
5. In the same way, perform the adjustment for 2 CH, under the following conditions.

INPUT	INPUT button	FORMAT button	TP (BA board)	CV (BA board)
	(SUB CONTROL PANEL)			
B	B	CODED	TP201	CV201, 202
R/R-Y		RGB	TP401	CV401, 402
G/Y/TEST		RGB	TP501	CV501, 502
B/B-Y		RGB	TP601	CV601, 602

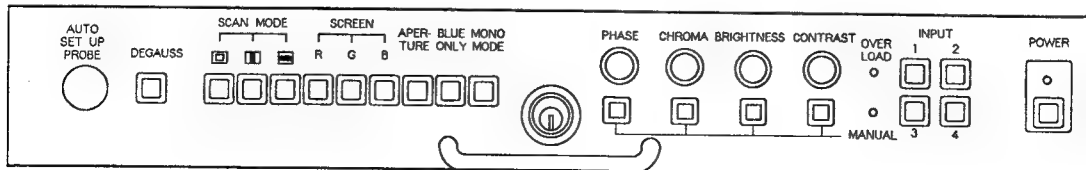
SUB CONTROL PANEL (HY board)



BA board



FRONT PANEL





## 5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

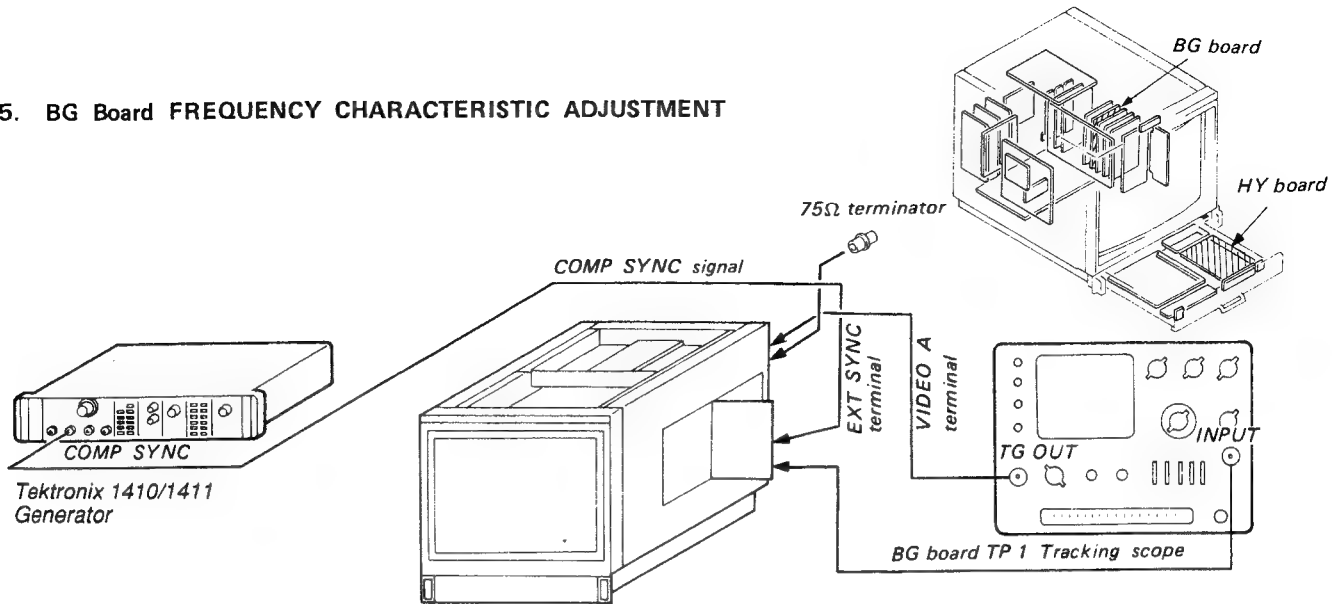


Fig. 5-1

- Complete the connection as shown in Fig 5-1.
  - SYNC button (SUB CONTROL PANEL)..... EXT
  - CONTRAST control ..... Minimum
  - BRIGHTNESS control ..... Minimum
  - S1 (BG Board) ..... 4.5MHz (4.5 6.5)
- Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within 0±0.5dB)

\*Waveform movement by RV1, CV2, CV3

< RV1 >



< CV2 >



< CV3 >

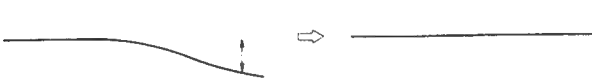
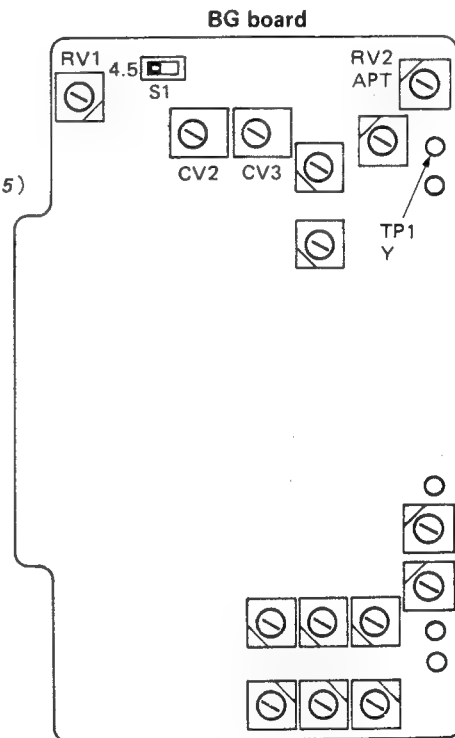


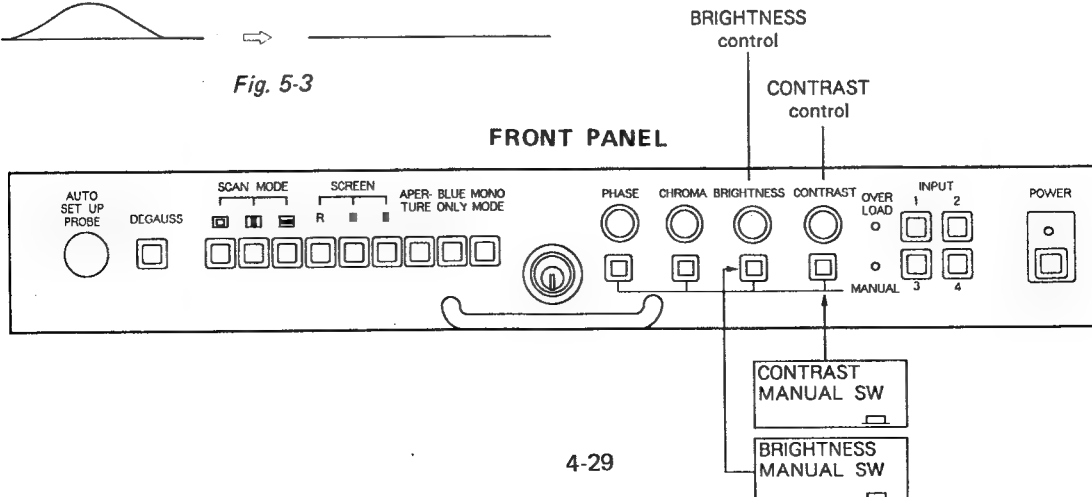
Fig. 5-2



- Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.



Fig. 5-3



## 6. COMPONENT INPUT LEVEL ADJUSTMENT

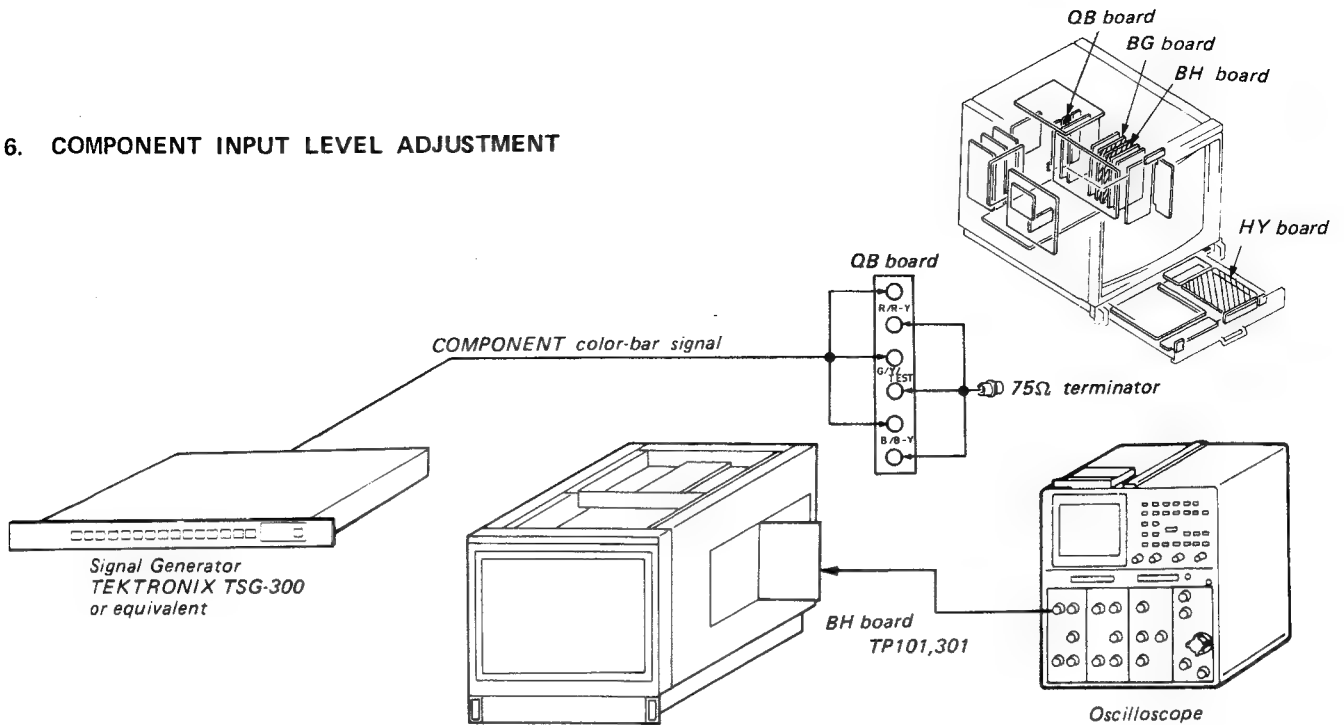


Fig. 6-1

1. Complete the connections as shown in Fig. 6-1.
  - **FORMAT** button (SUB CONTROL PANEL) ..... YUV
2. Connect an oscilloscope to the TP-101 of BH board.
3. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)
4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

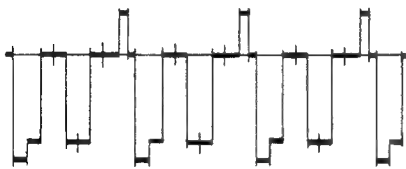


Fig. 6-2

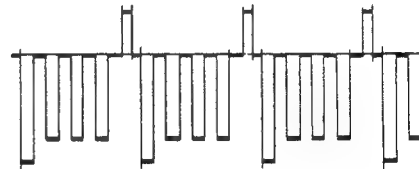
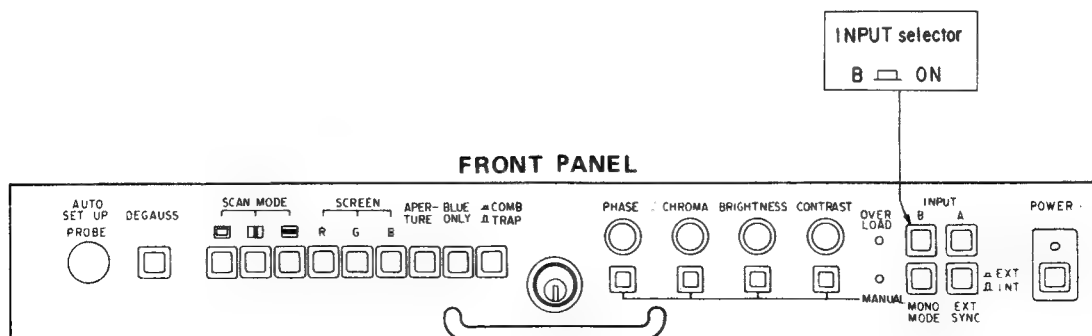
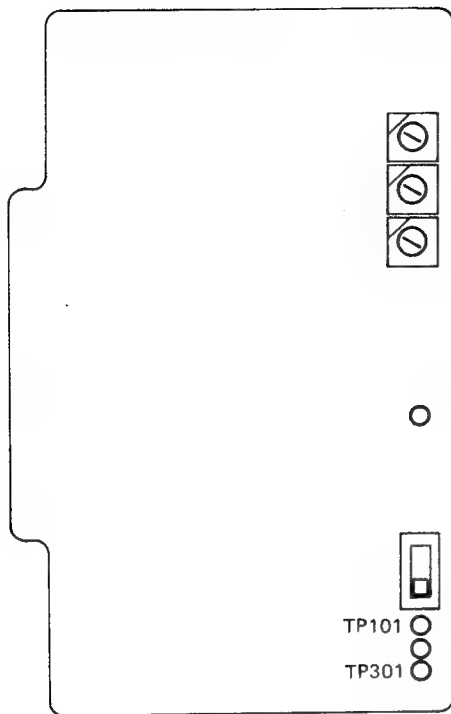


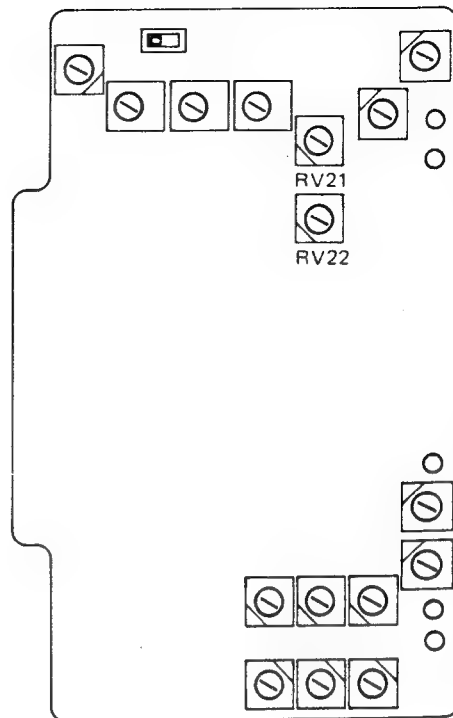
Fig. 6-3



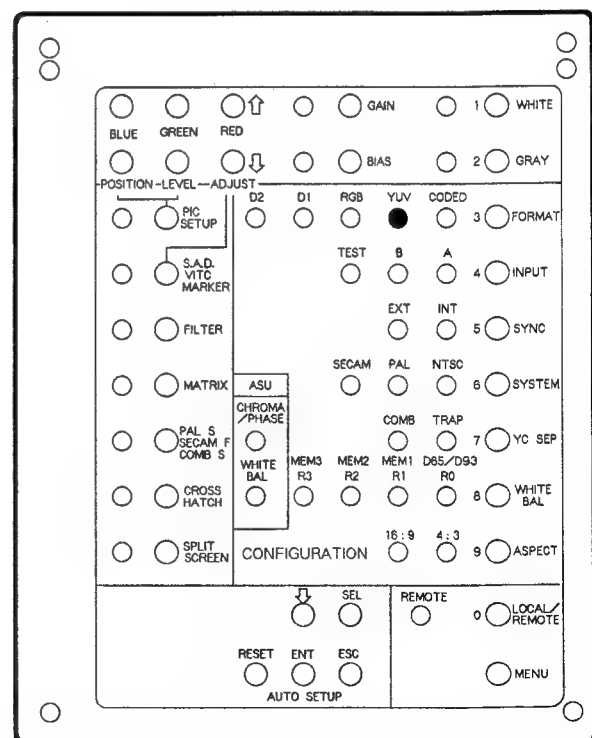
BH board



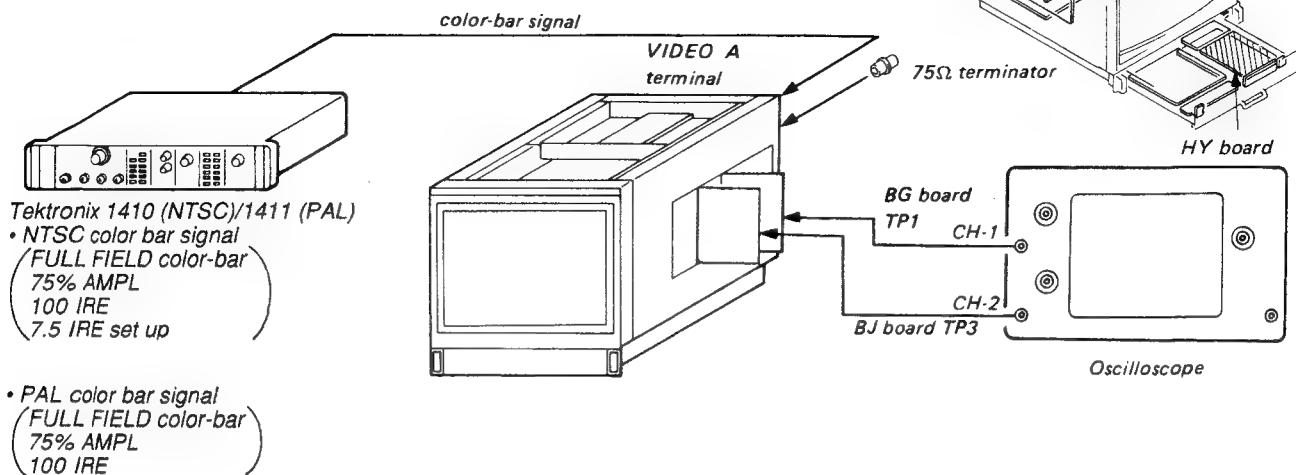
BG board



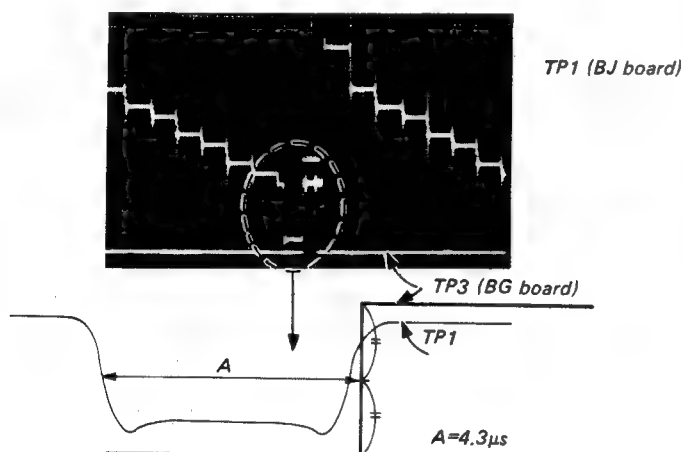
SUB CONTROL PANEL (HY board)



## 7. BJ Board BURST GATE PULSE ADJUSTMENT



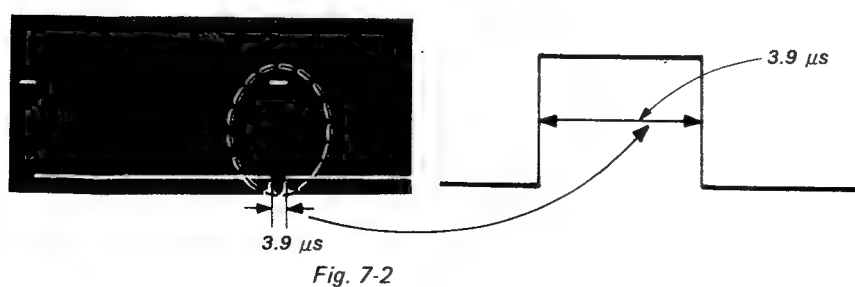
1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the width A is  $4.3\mu\text{s}$  as shown in Fig. 7-1.



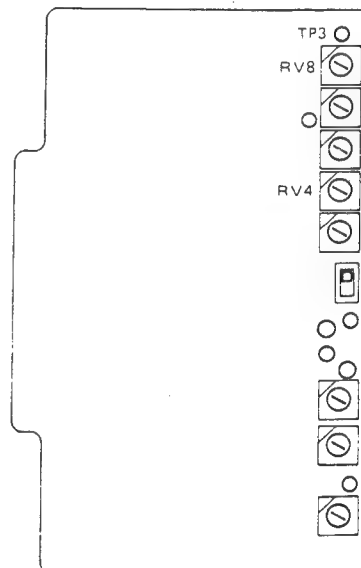
\* Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to  $4.3\mu\text{s}$ .

Fig. 7-1

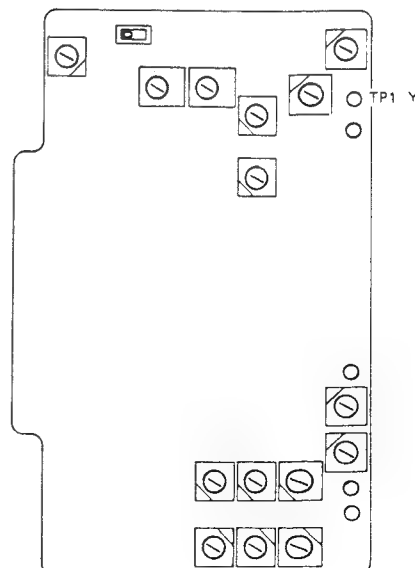
4. Adjust RV4 of BJ board so that the burst gate pulse width is  $3.9\mu\text{s}$  as shown in Fig. 7-2.



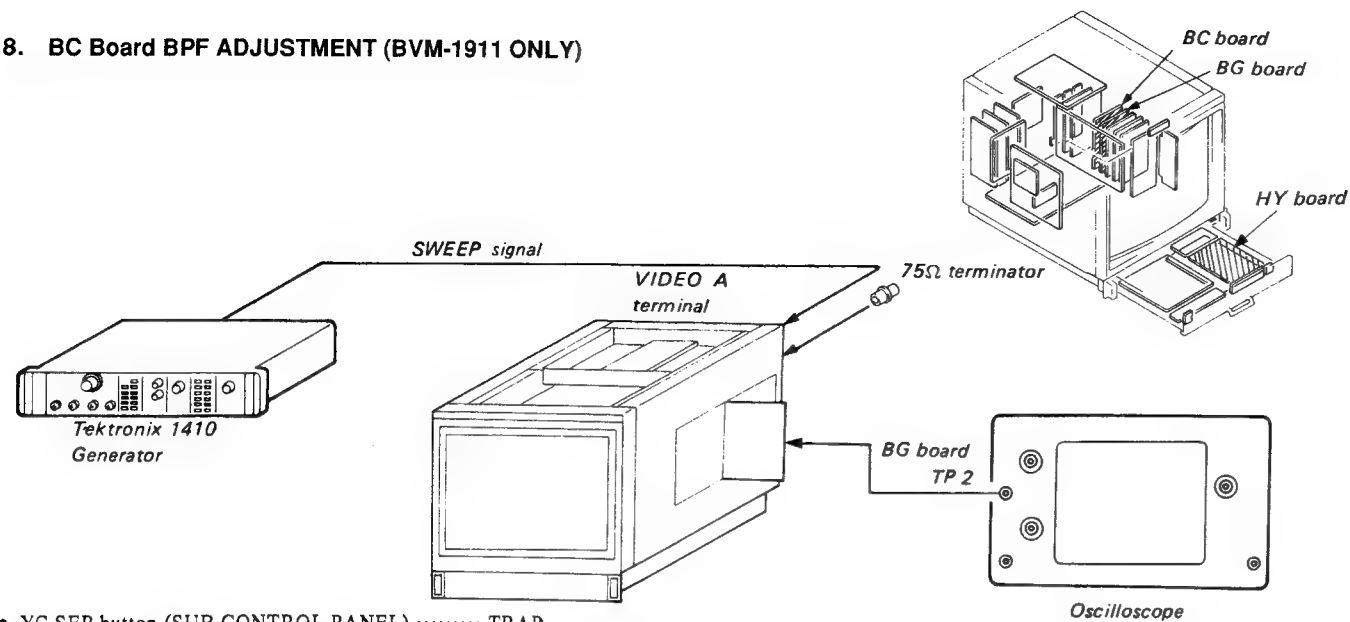
BJ board



BG board



8. BC Board BPF ADJUSTMENT (BVM-1911 ONLY)



- YC SEP button (SUB CONTROL PANEL) ..... TRAP
1. Input SWEEP signal to the VIDEO A terminal of the set.
  2. Connect an oscilloscope to the TP2 on the BG board.
  3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

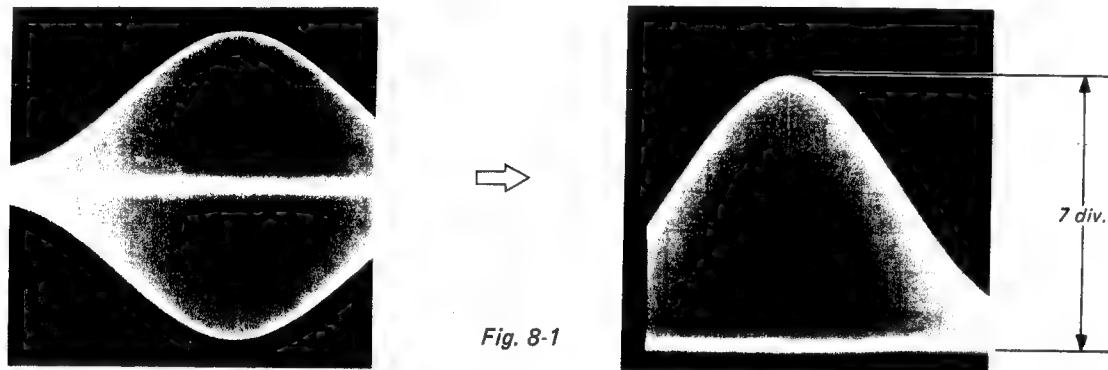


Fig. 8-1

4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.

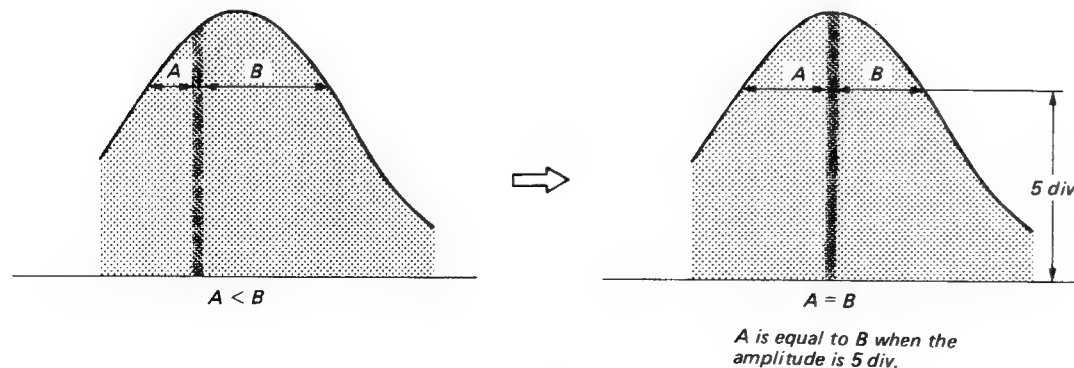
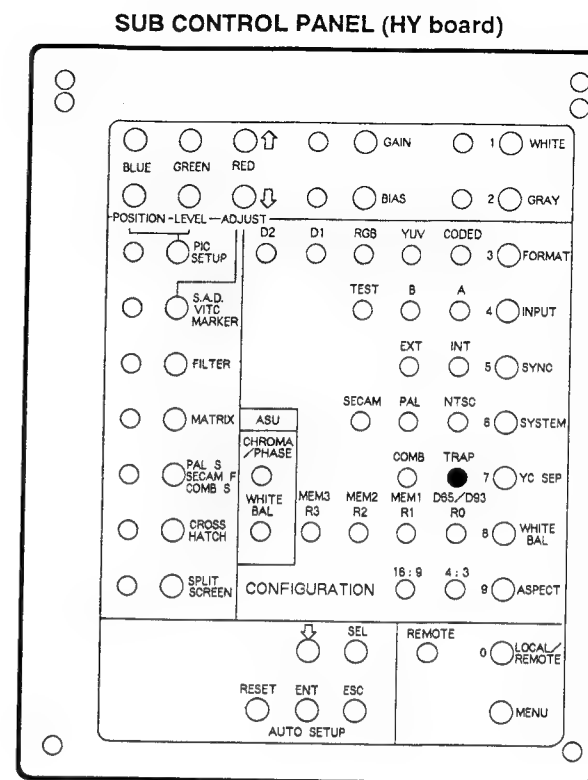
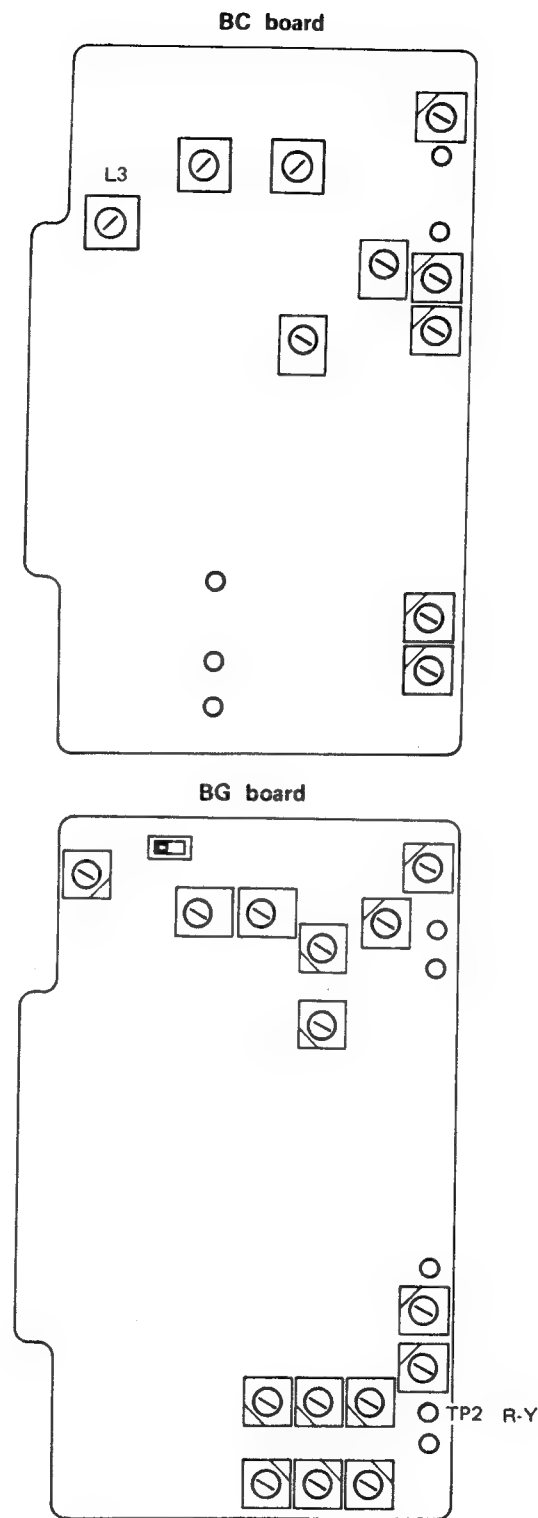
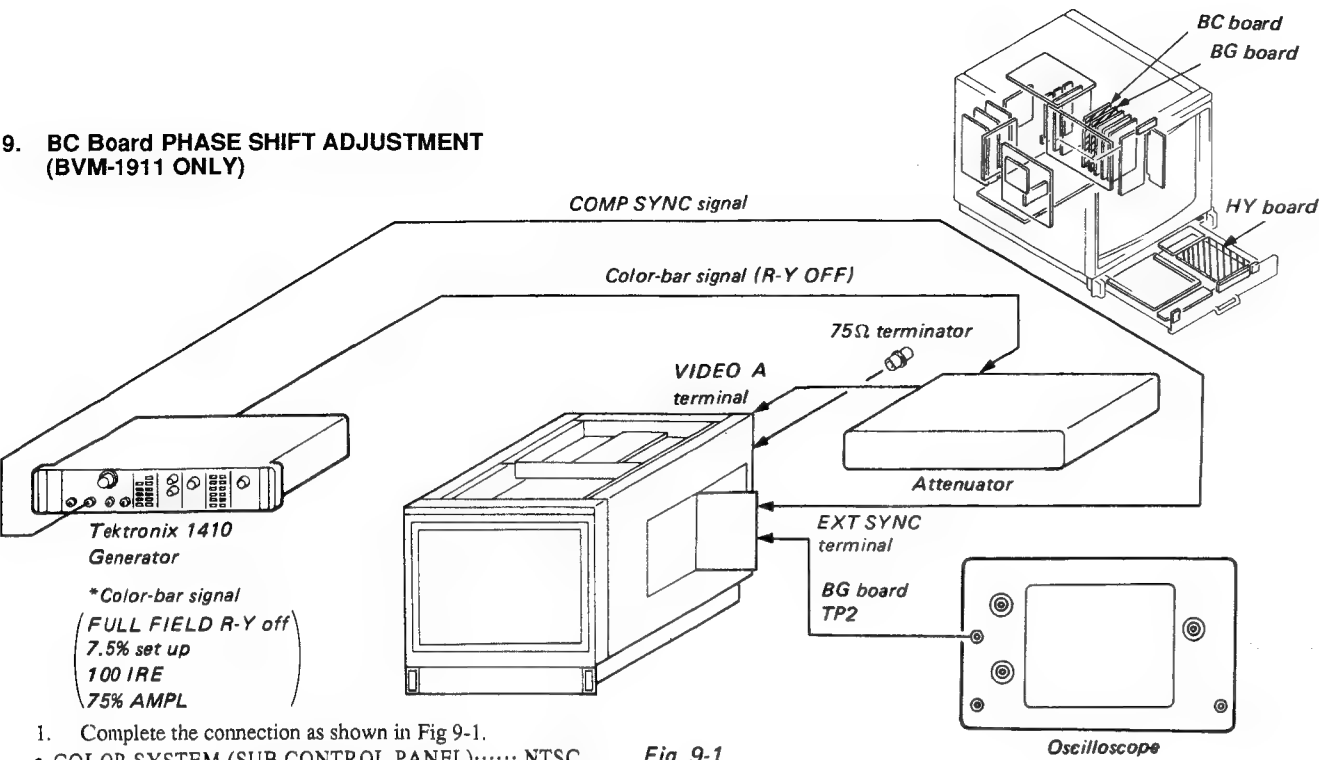


Fig. 8-2



9. BC Board PHASE SHIFT ADJUSTMENT  
(BVM-1911 ONLY)



1. Complete the connection as shown in Fig 9-1.
  - COLOR SYSTEM (SUB CONTROL PANEL)..... NTSC
  - FORMAT button (SUB CONTROL PANEL)..... CODED
  - YC SEP button (SUB CONTROL PANEL)..... TRAP
  - SYNC button (SUB CONTROL PANEL)..... EXT
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel as shown in Fig. 9-2.
4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

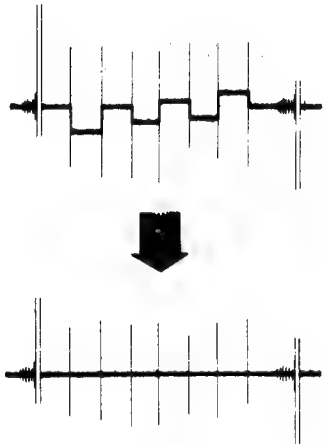
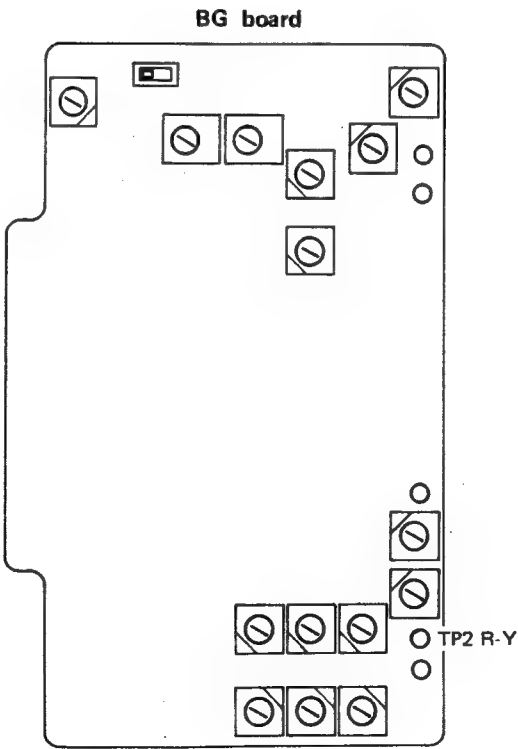
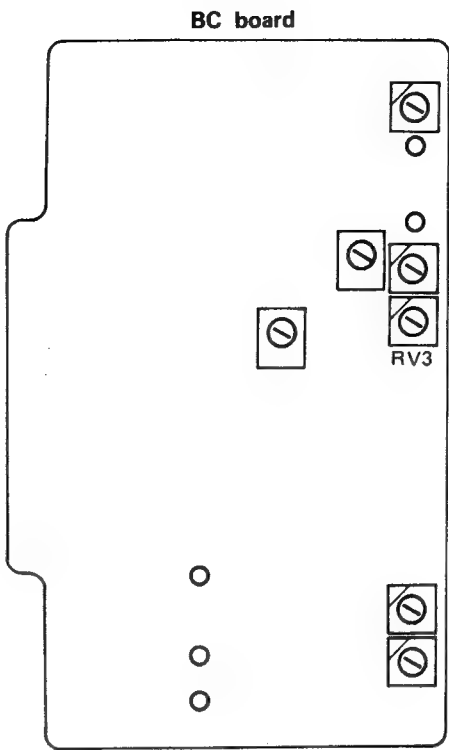
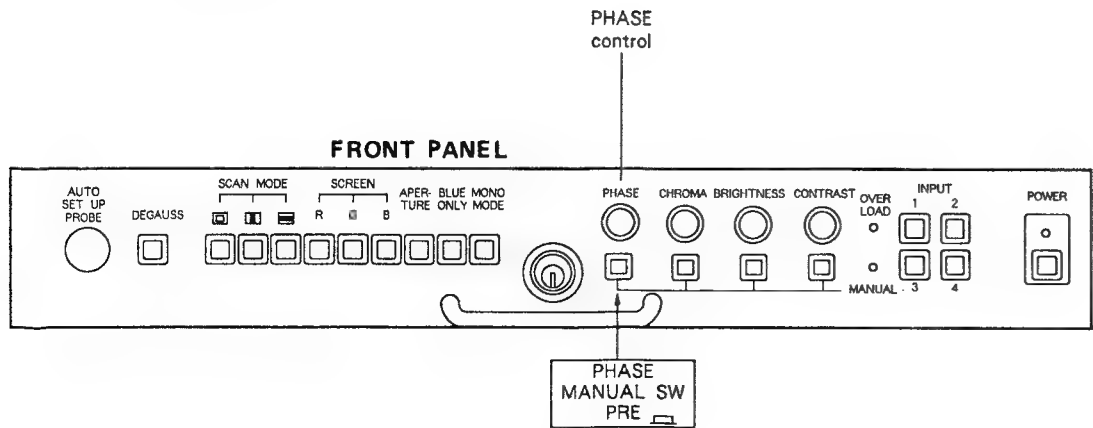
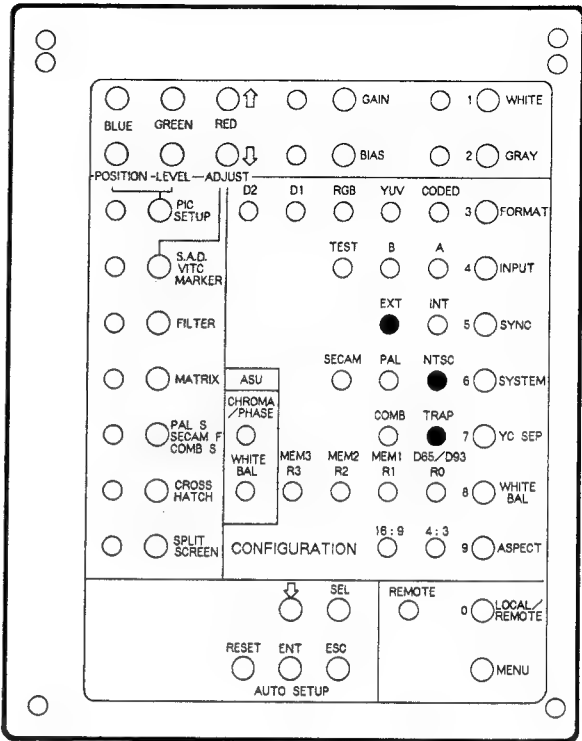


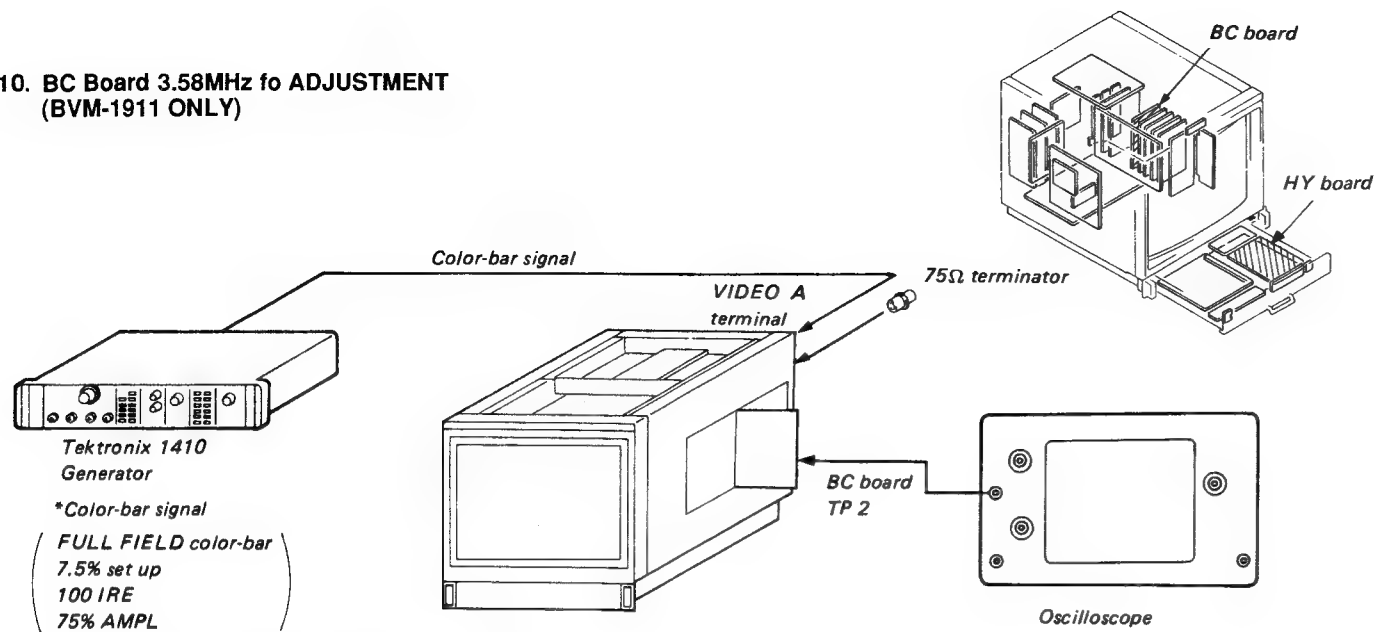
Fig. 9-2



SUB CONTROL PANEL (HY board)



# 10. BC Board 3.58MHz fo ADJUSTMENT (BVM-1911 ONLY)



- YC SEP button (SUB CONTROL PANEL) ..... TRAP
1. Input color-bar signal to the VIDEO A terminal of the set.
  2. Connect an oscilloscope to the TP2 of BC board.
  3. Short-circuit between TP6 and TP7 of BC board with a jumper wire.
  4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
  5. Turn off the power of this monitor, and disconnect TP6 and TP7 of BC board.

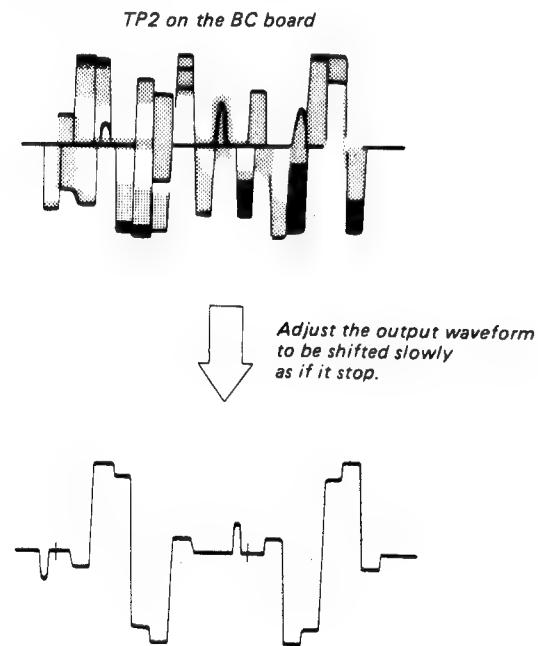
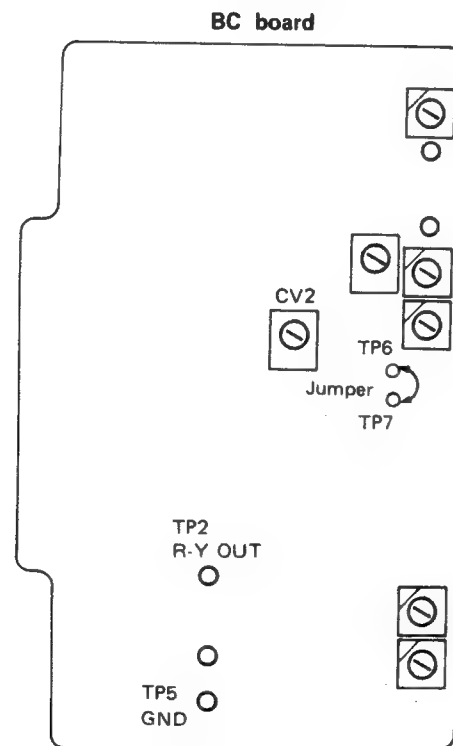
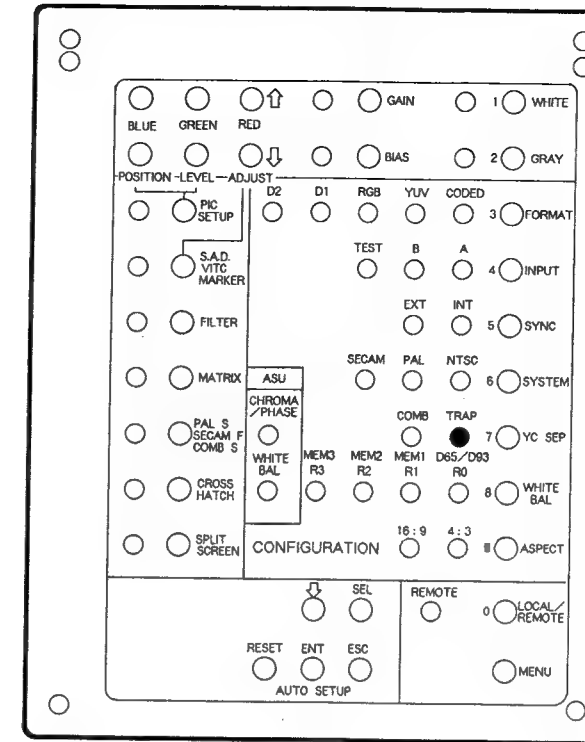


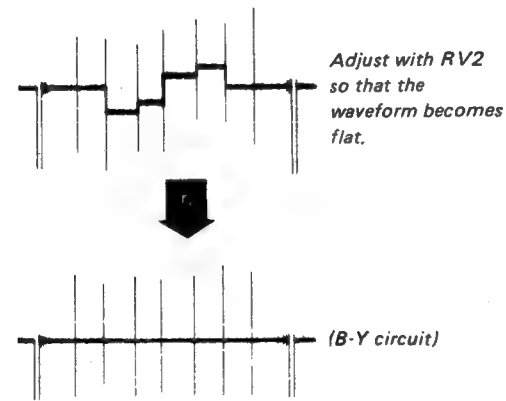
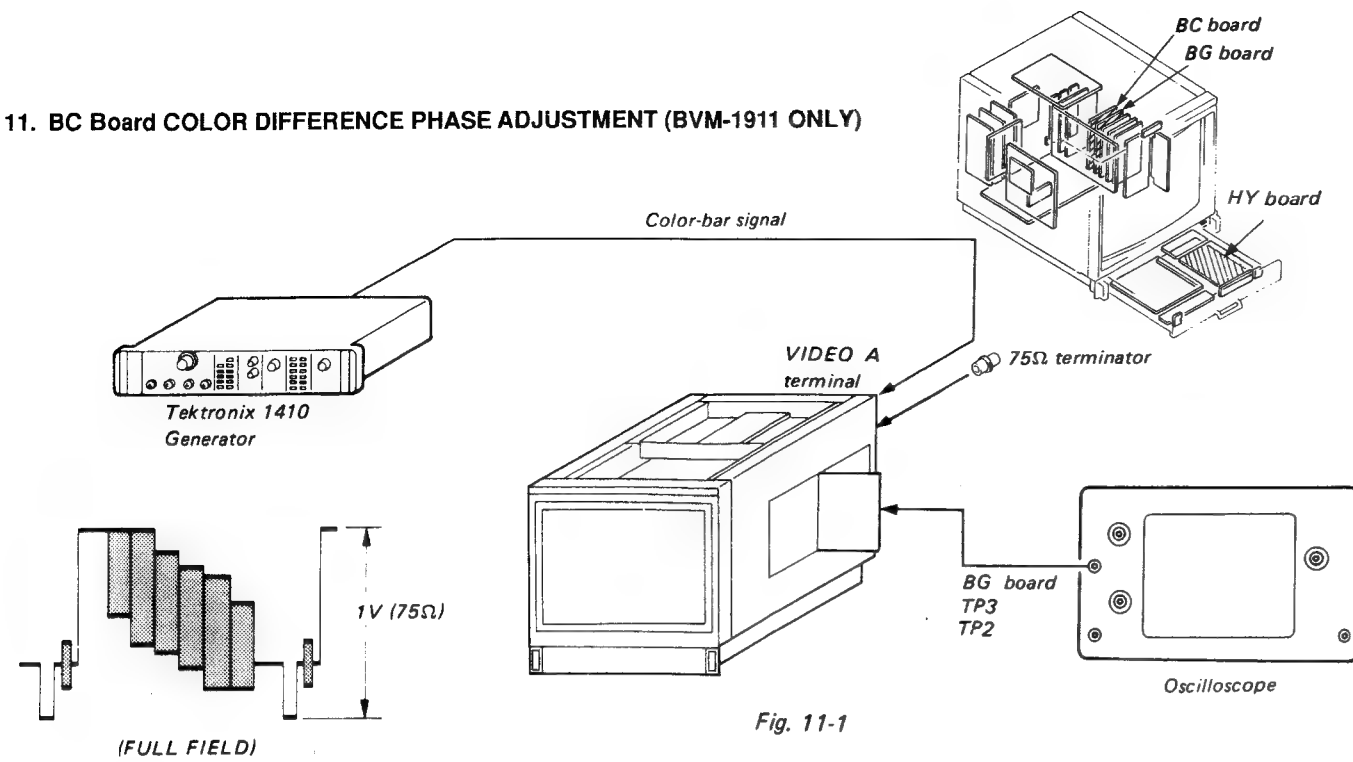
Fig. 10-1



## SUB CONTROL PANEL (HY board)



# 11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1911 ONLY)



• YC SEP button (SUB CONTROL PANEL) ..... TRAP

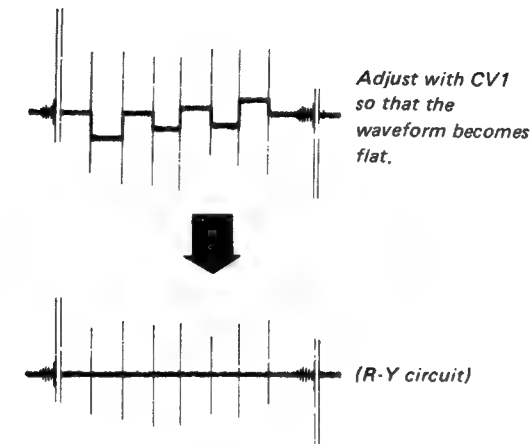
1. Complete the connections as shown in Fig. 11-1.
2. Turn on the power of this monitor.

## B-Y System Adjustment

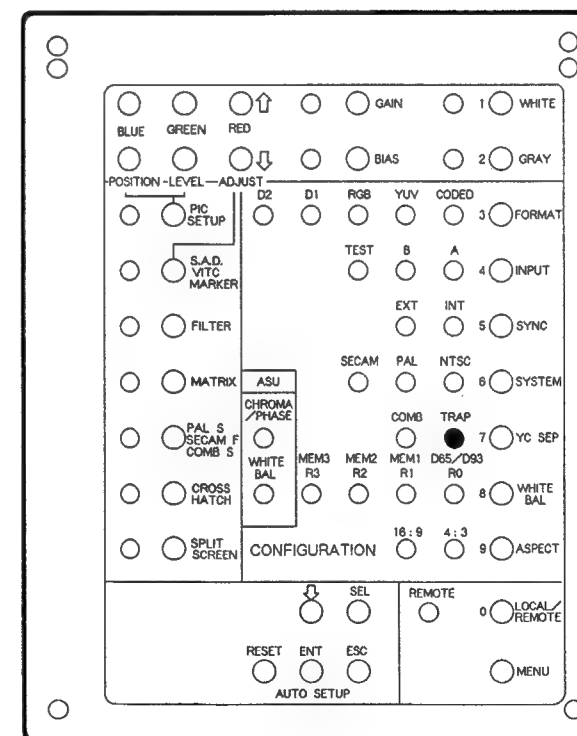
3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the output waveform is flat. (See Fig. 11-2.)

## Quad Adjustment

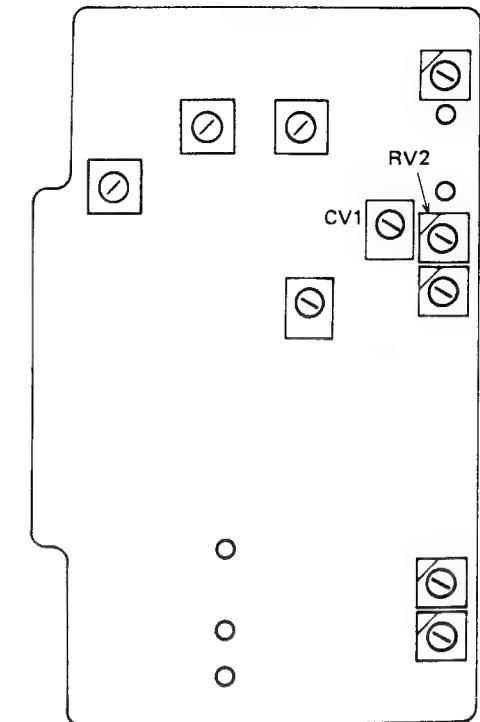
5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.



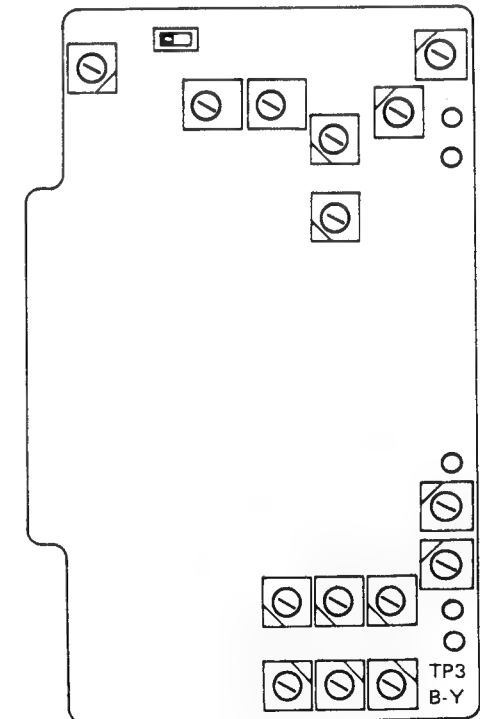
## SUB CONTROL PANEL (HY board)



## BC Board

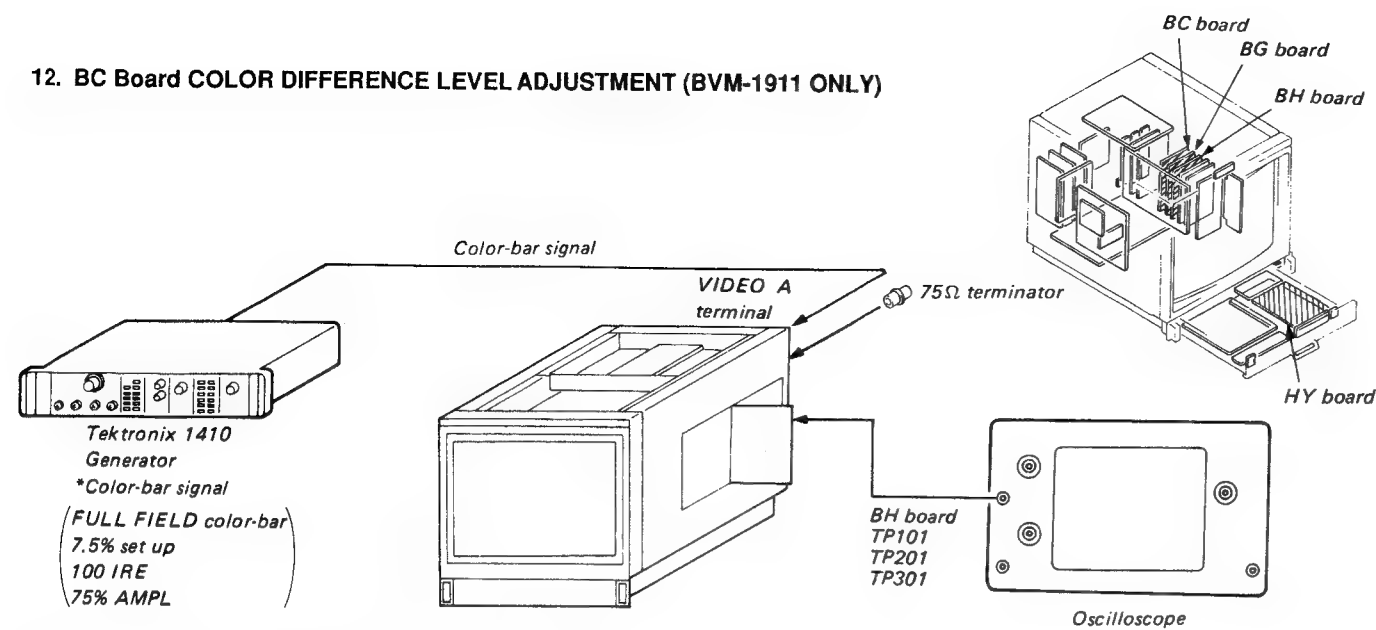


## BG Board

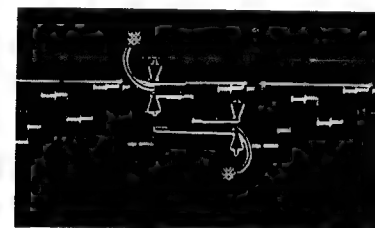




## 12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1911 ONLY)



- YC SEP button (SUB CONTROL PANEL) ..... TRAP
- 1. Input color-bar signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP101 of BH board.
- 3. Adjust RV4 of BC board so that the levels with \* is flat as shown in Fig. 12-1.

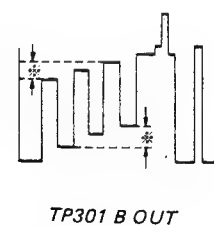


TP101 R OUT

Fig. 12-1

\* Adjust the levels with \* to be flat respectively using RV4 of BC board.

- 4. Connect an oscilloscope to the TP301 of BH board.
- 5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.



TP301 B OUT

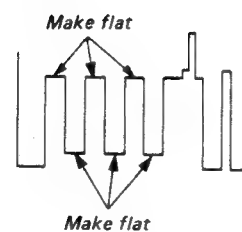
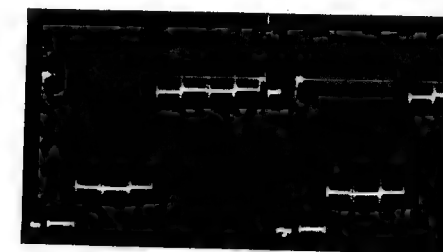


Fig. 12-2

- 6. Connect an oscilloscope to the TP201 of BH board.
- 7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

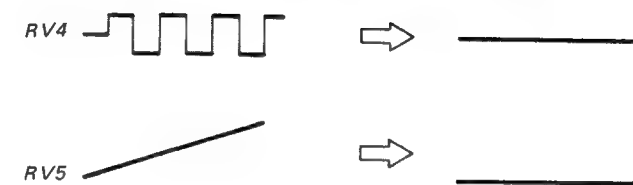
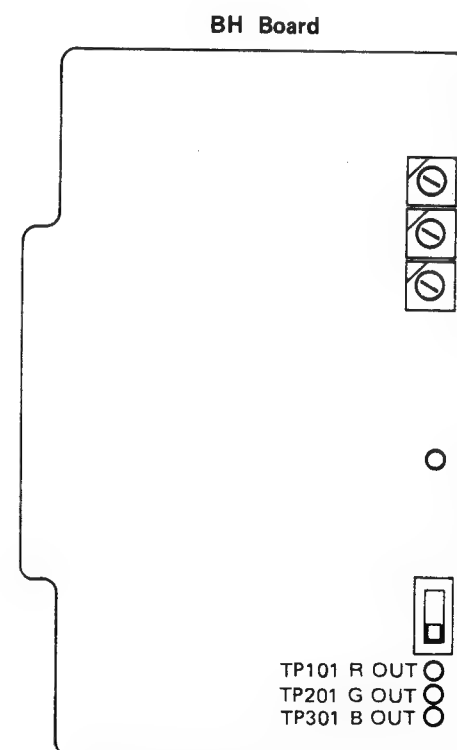
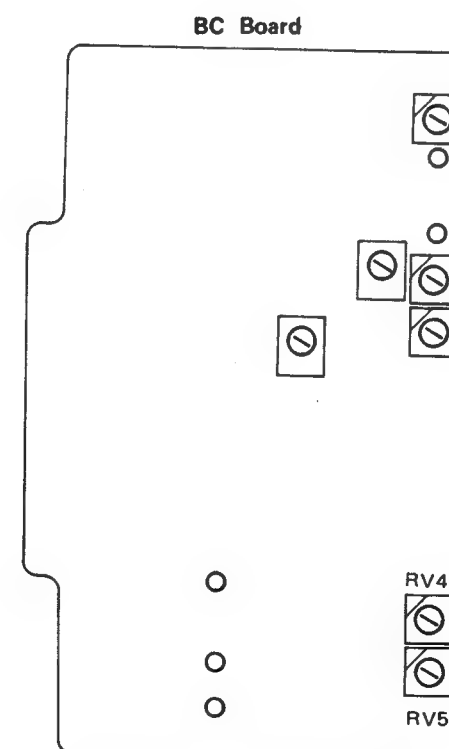
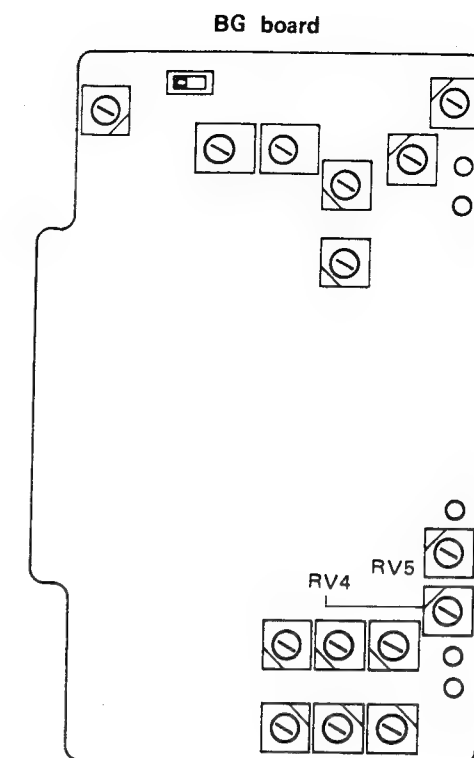
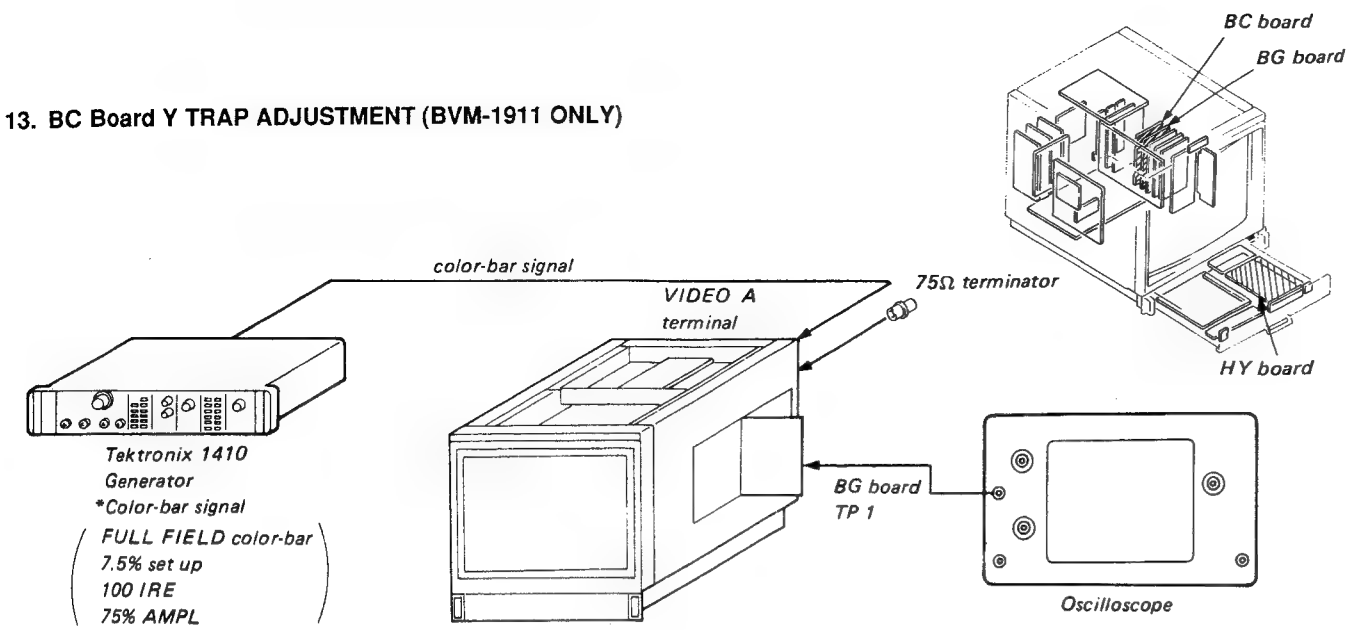


Fig. 12-3



13. BC Board Y TRAP ADJUSTMENT (BVM-1911 ONLY)



- COLOR SYSTEM button (SUB CONTROL PANEL)..... NTSC
  - YC SEP button (SUB CONTROL PANEL) ..... TRAP
1. Input color-bar signal to VIDEO A terminal of the set.

2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.

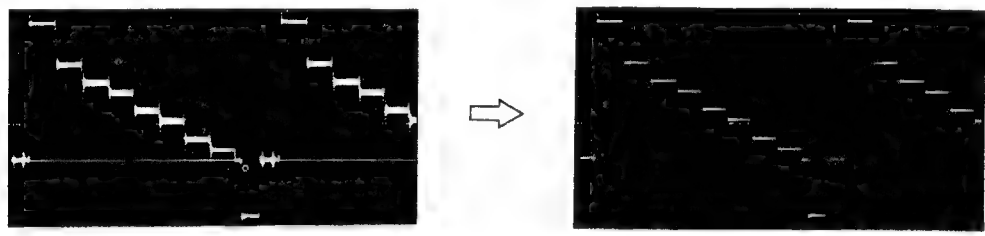
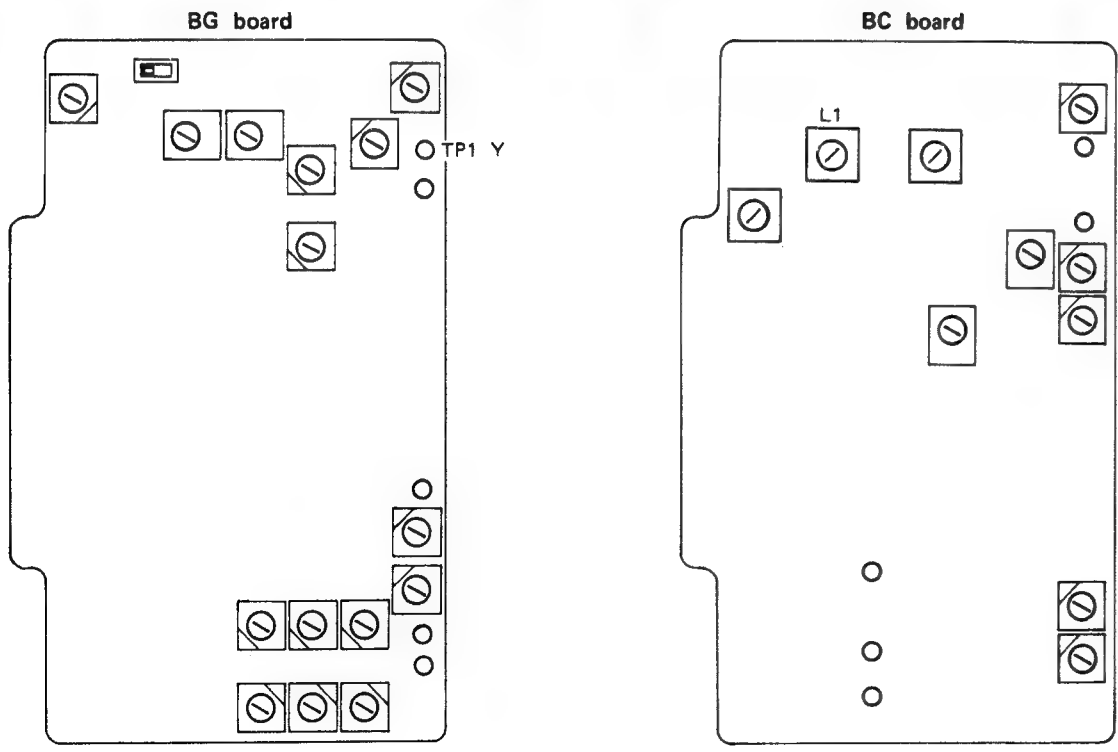
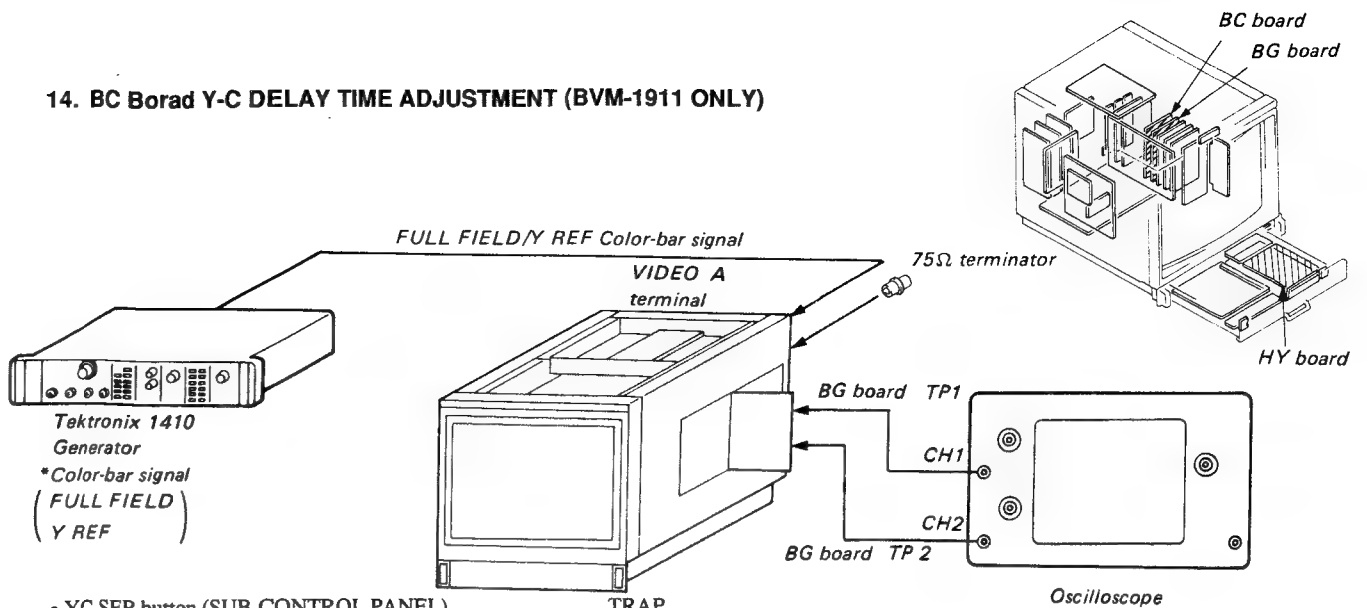


Fig. 13-1



14. BC Board Y-C DELAY TIME ADJUSTMENT (BVM-1911 ONLY)



- YC SEP button (SUB CONTROL PANEL) ..... TRAP
1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
  2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
  3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.

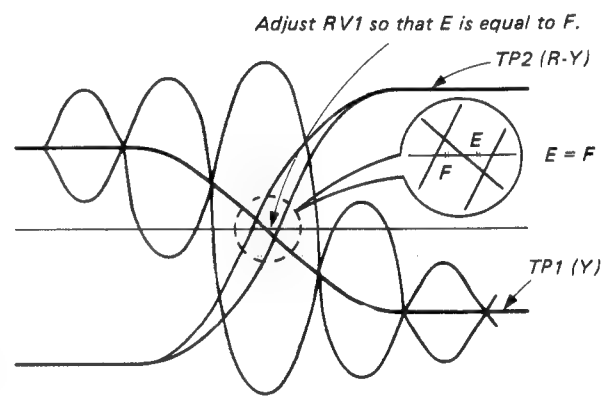
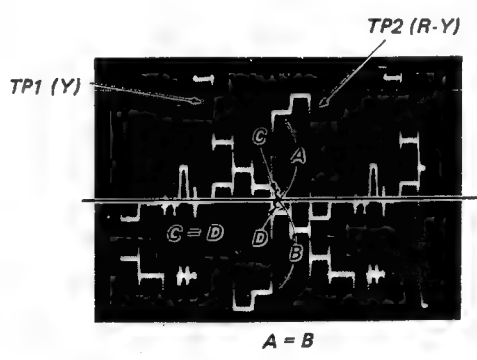
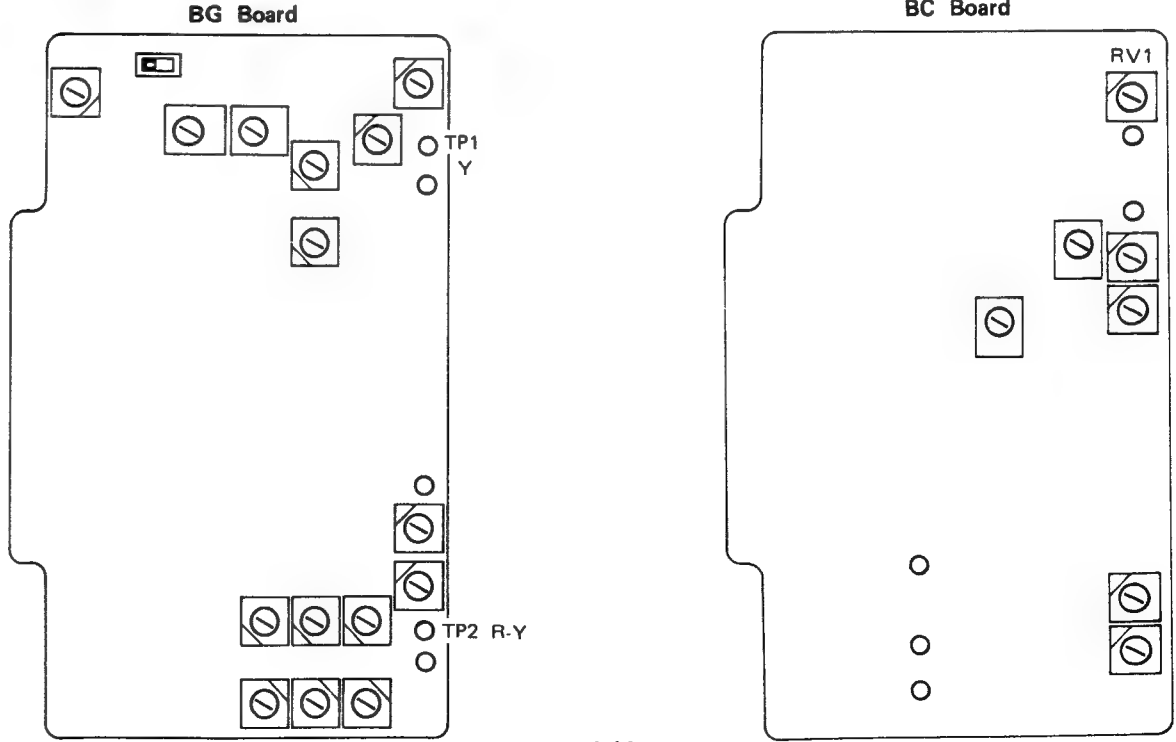
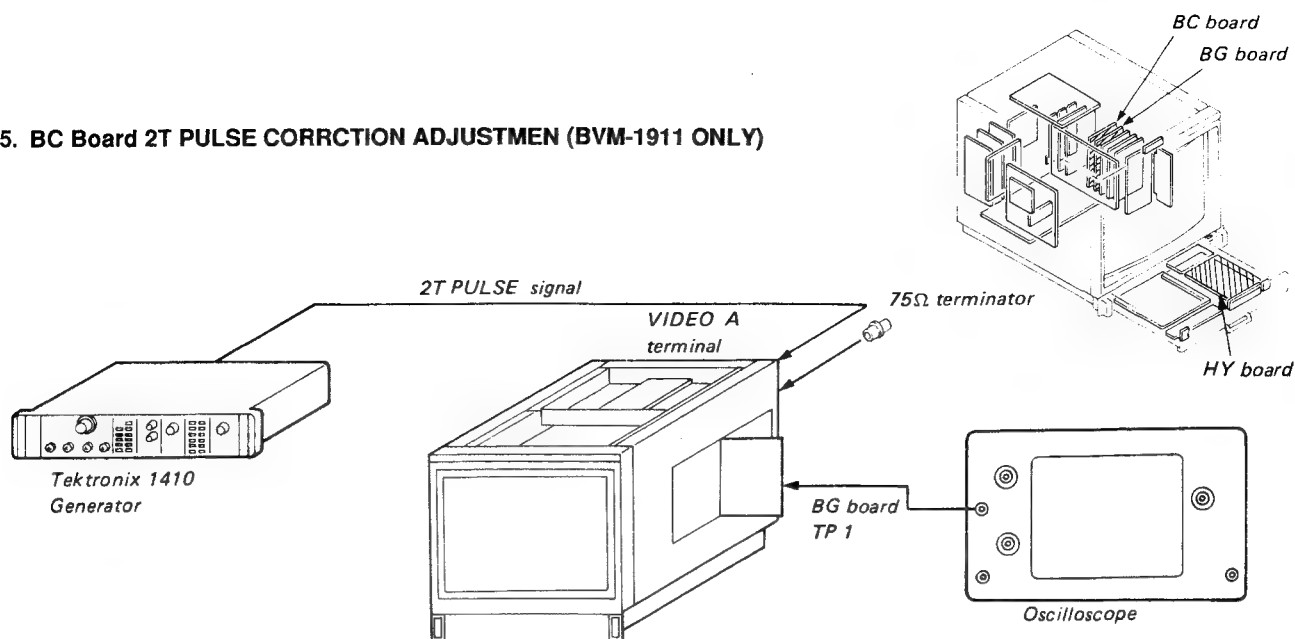


Fig. 14-1

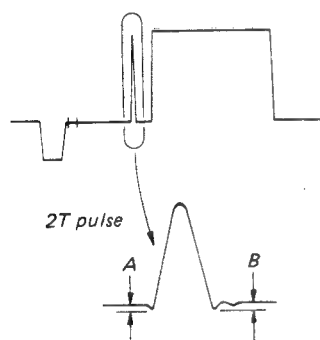


## 15. BC Board 2T PULSE CORRECTION ADJUSTMEN (BVM-1911 ONLY)

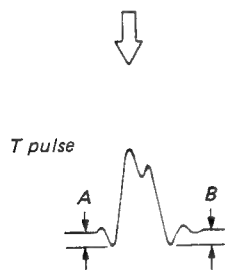


### • YC SEP button (SUB CONTROL PANEL) ..... TRAP

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.



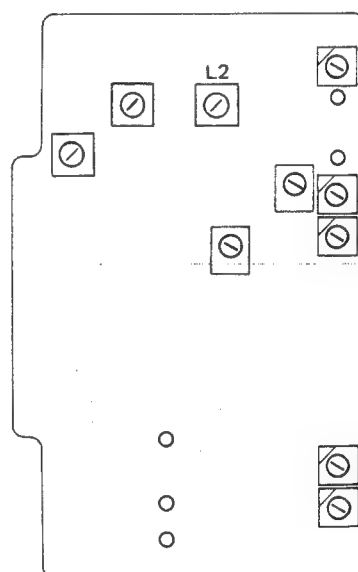
\* Adjust L2 to obtain the condition  $A = B$ .



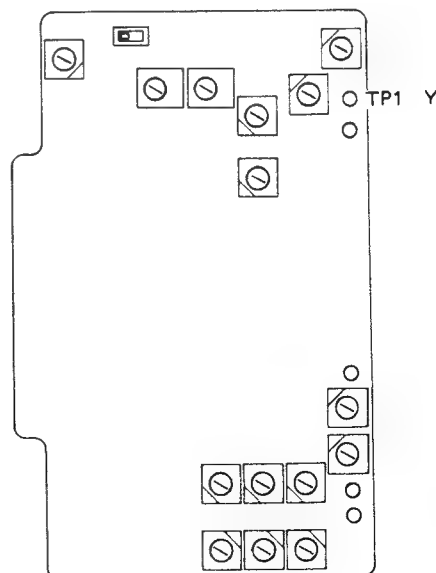
\* The waveform balance should not be lost extremely.

Fig. 15-1

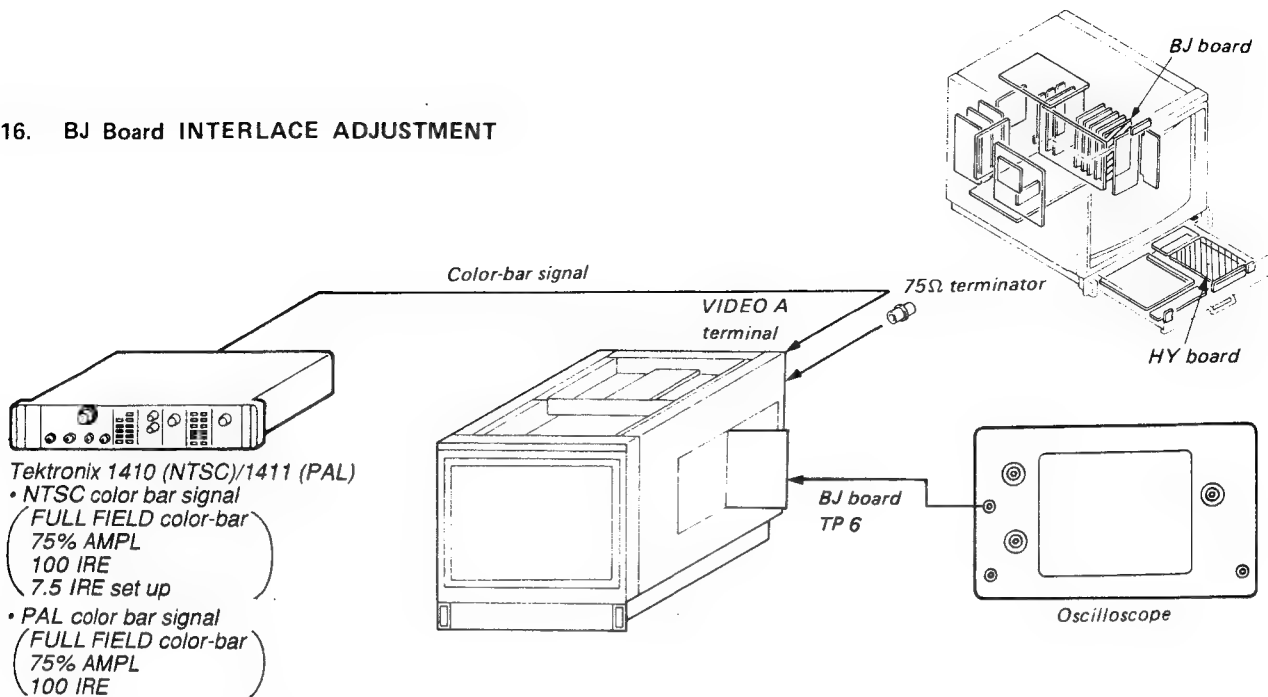
### BC board



### BG board



## 16. BJ Board INTERLACE ADJUSTMENT



• YC SEP button (SUB CONTROL PANEL) ..... TRAP

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

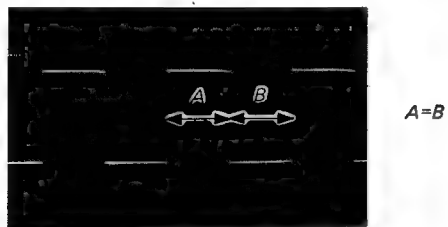
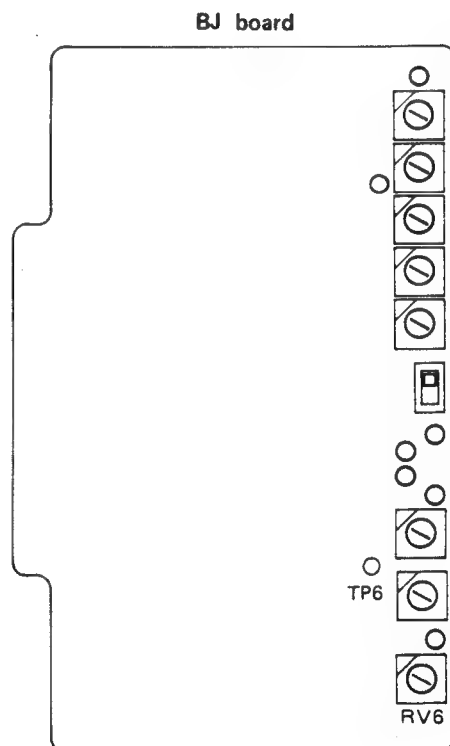
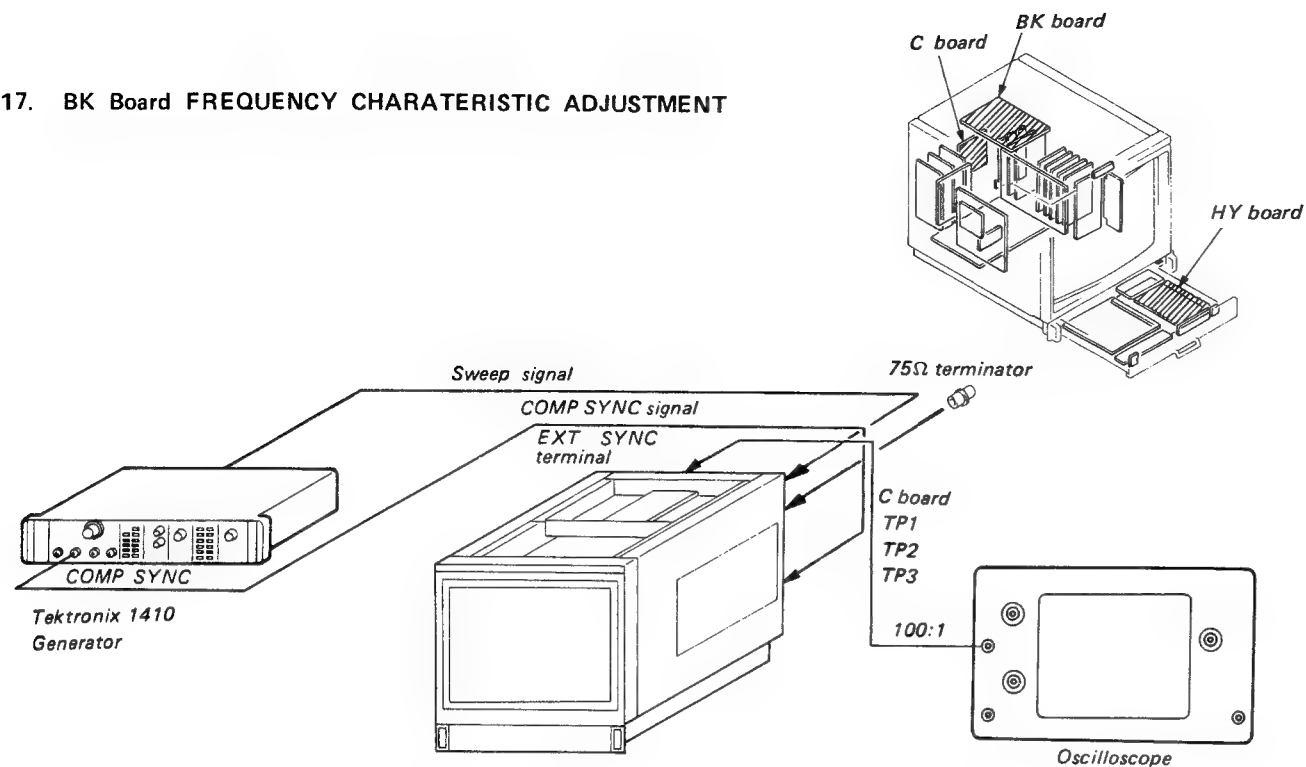



Fig. 16-1



17. BK Board FREQUENCY CHARACTERISTIC ADJUSTMENT



1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
  - YC SEP button (SUB CONTROL PANEL) ... TRAP (BVM-1911) (BVM-2011P)
  - SYNC button (SUB CONTROL PANEL) ... EXT
  - MODE selector (FRONT PANEL) ... MONO (  )
  - FILTER button (SUB CONTROL PANEL) ... OFF
2. Connect an oscilloscope to the TP1 on the C board.  
\*Probe: 100:1
3. Adjust CV101 and CV102 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
4. Connect an oscilloscope to the TP2 on the C board.
5. Adjust CV201 and CV202 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.
6. Connect an oscilloscope to the TP3 on the C board.
7. Adjust CV301 and CV302 on the BK board so that output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 17-1.

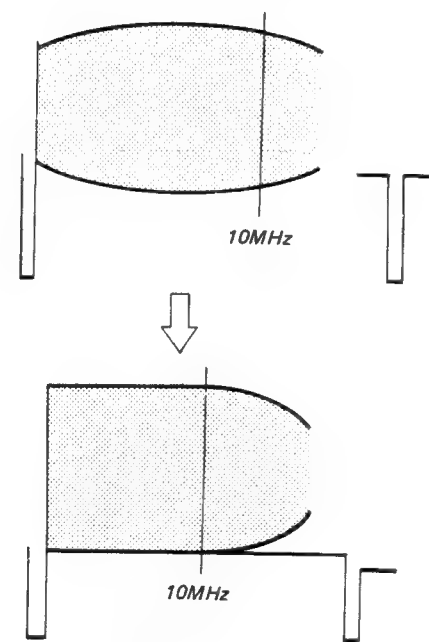
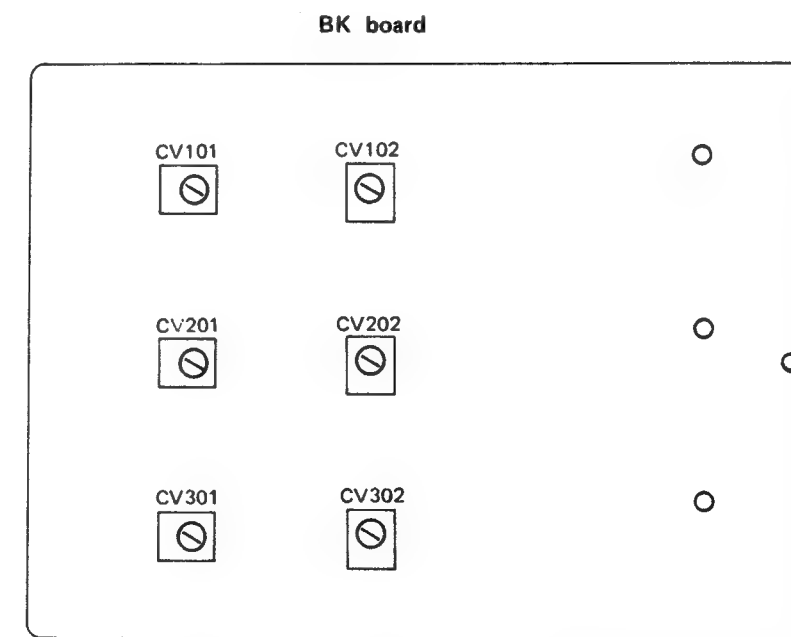
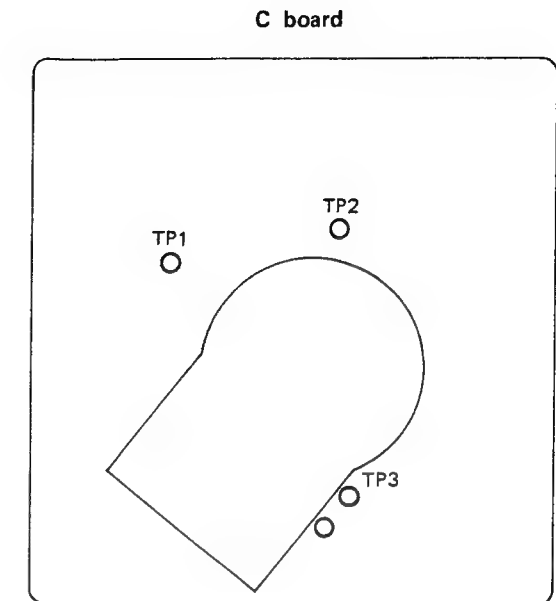
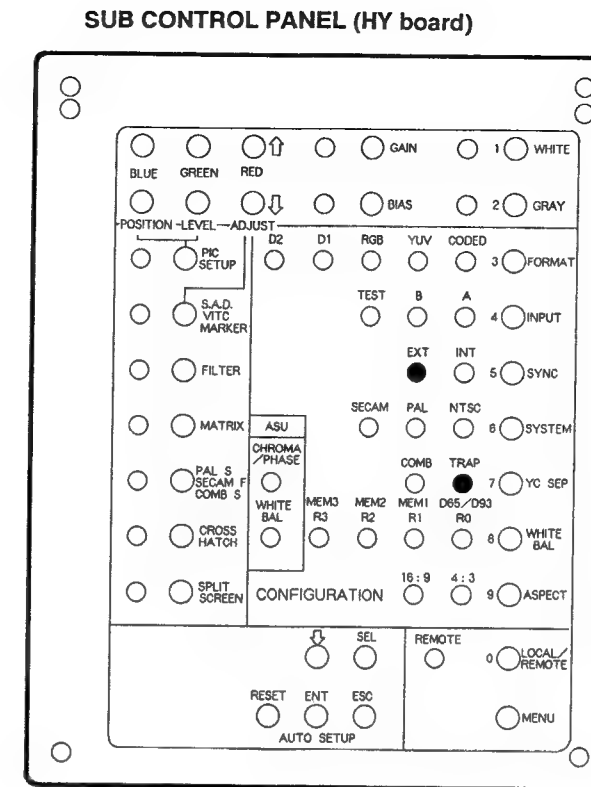
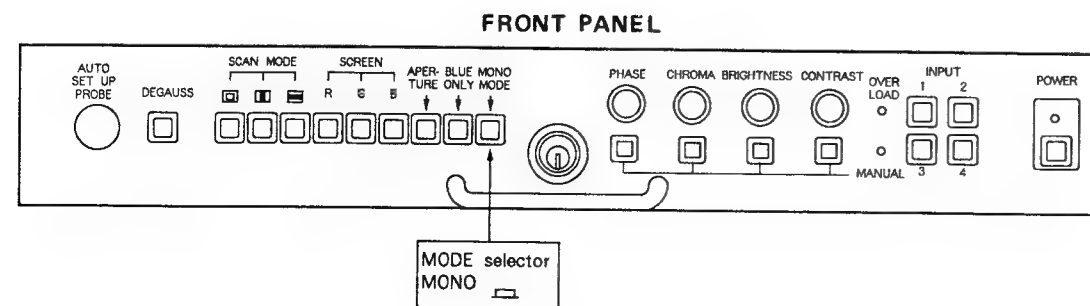
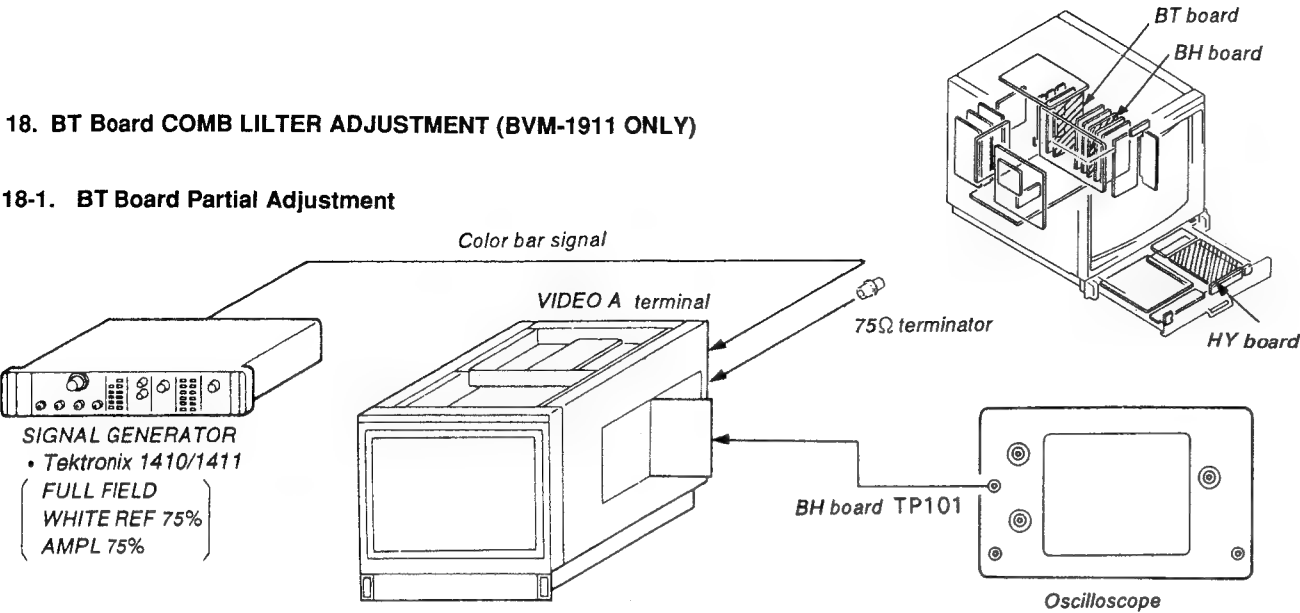


Fig. 17-1



18. BT Board COMB LILTER ADJUSTMENT (BVM-1911 ONLY)

18-1. BT Board Partial Adjustment



Luminance Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button on the sub control panel to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-1 to the center of the oscilloscope using RV3 (luminance level) on the BT board.

Chroma Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-1 to the center of the oscilloscope using RV8 (chroma level) on the BT board.

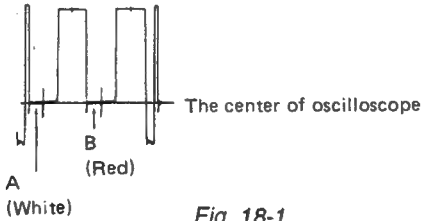
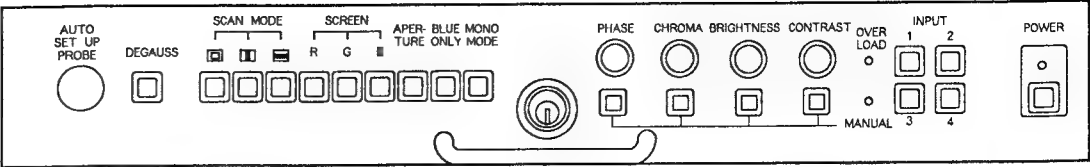


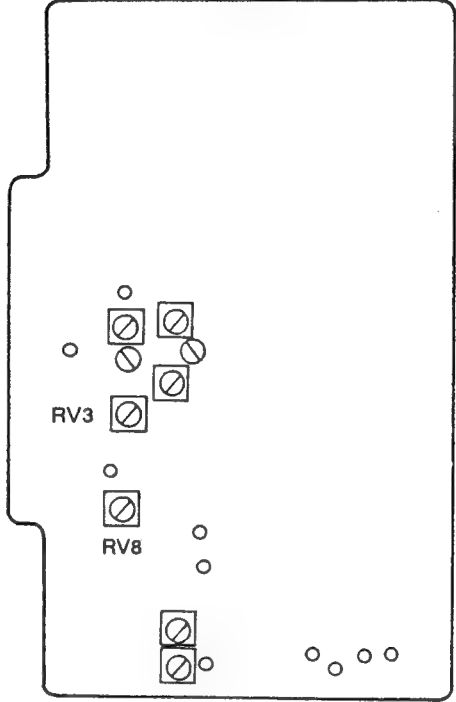
Fig. 18-1

**Note:** Never attempt to turn the following parts as these cannot be easily adjusted.  
FL1, FL2, FL3, DL3, DL5, DL6, DL8

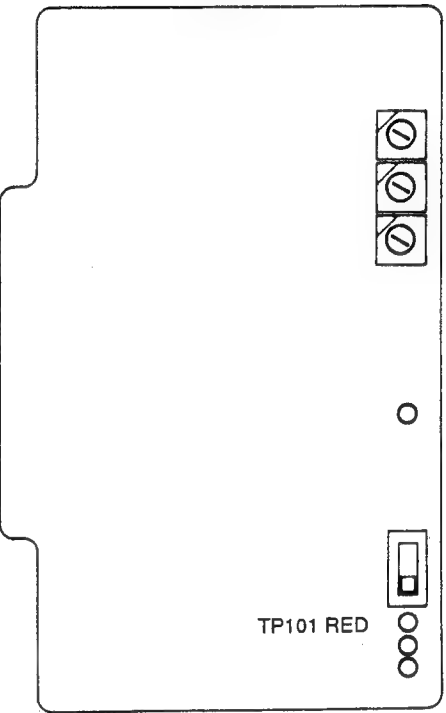
FRONT PANEL



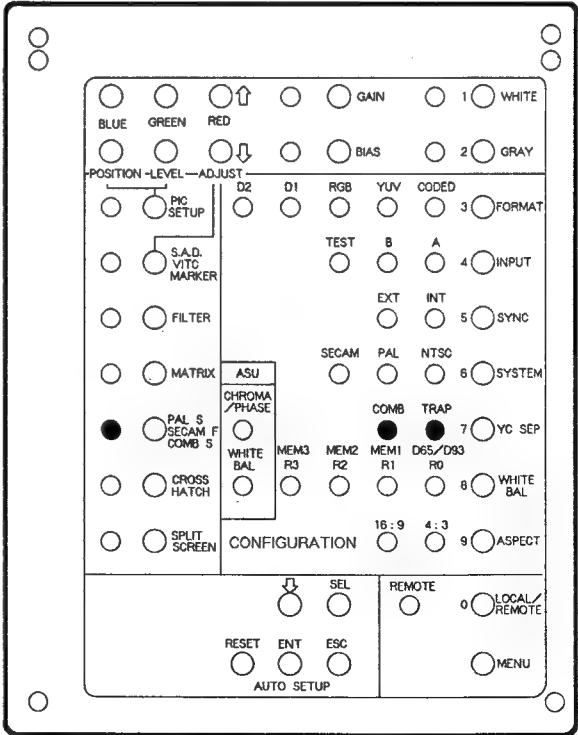
BT board



BH board

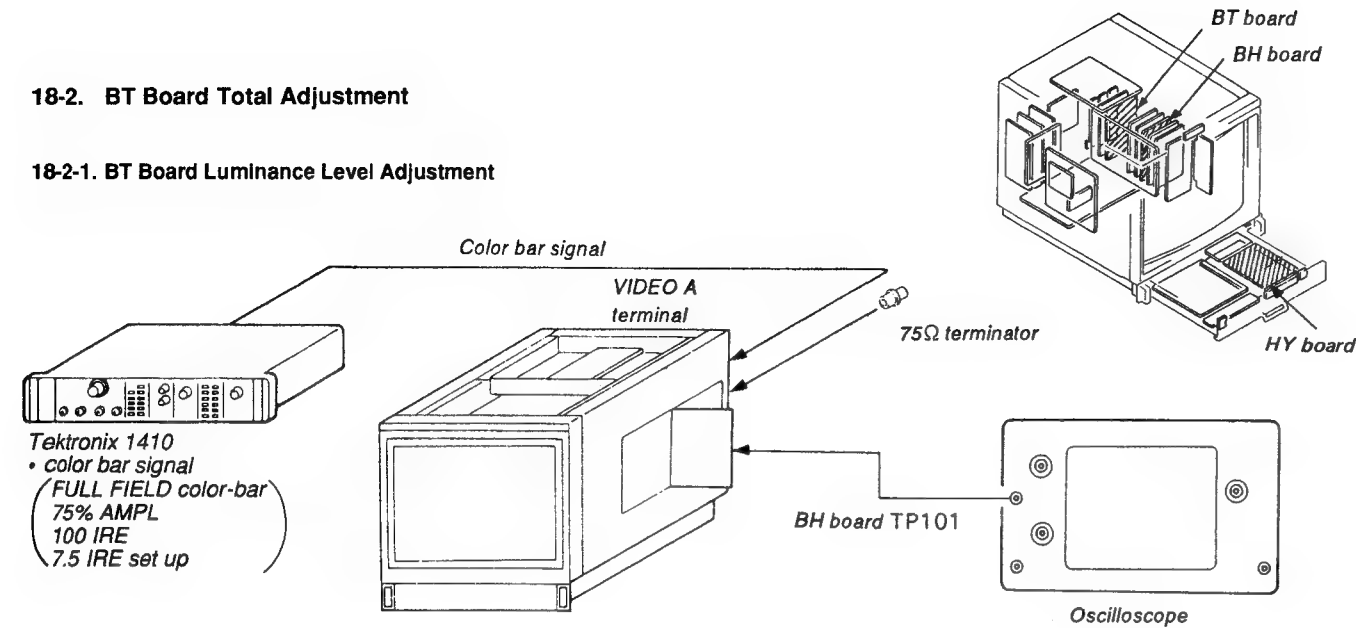


SUB CONTROL PANEL (HY board)



18-2. BT Board Total Adjustment

18-2-1. BT Board Luminance Level Adjustment



1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope until the portion A (white) of Fig. 18-2 is set to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV3 (luminance level) on the BT board.
8. Set the PAL S/SECAM F/COMB S button to the OFF.
9. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV9 (1H luminance level) on the BT board.

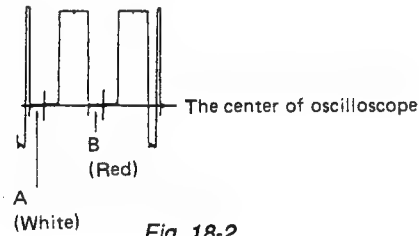
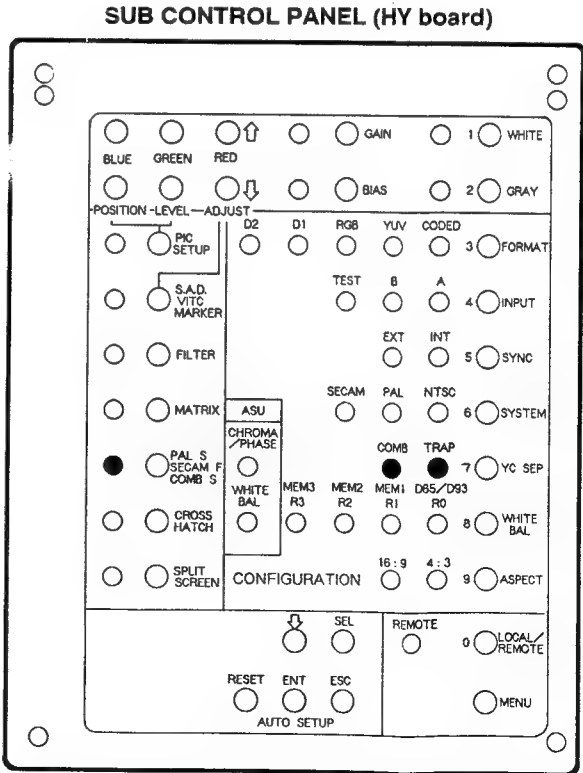
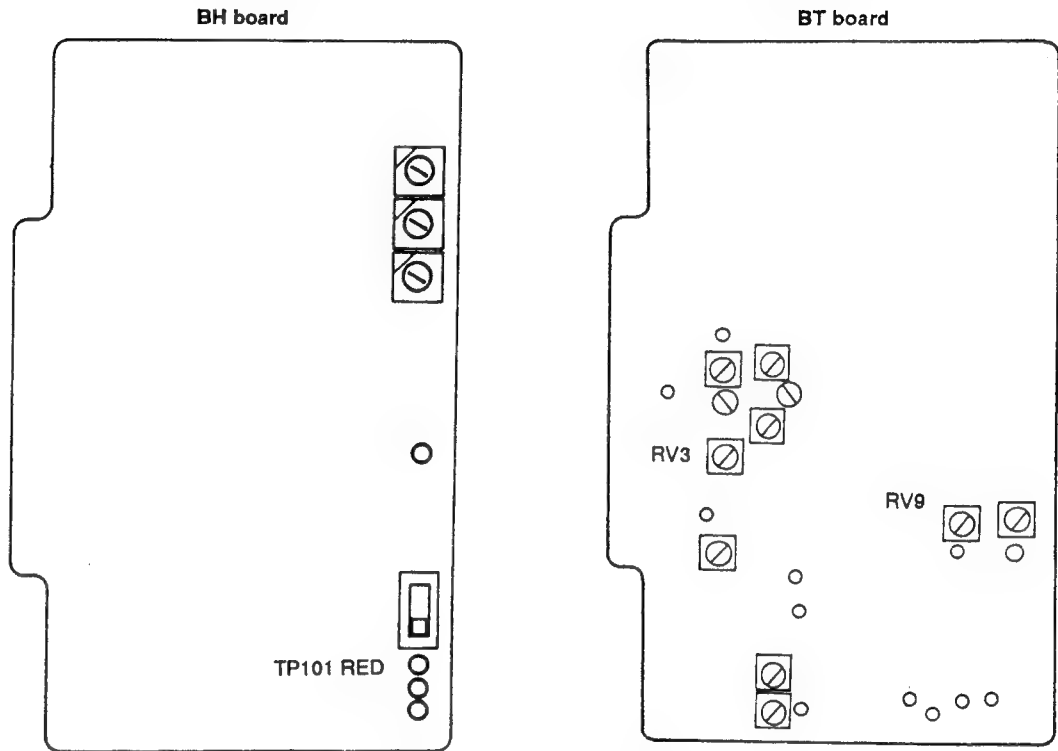
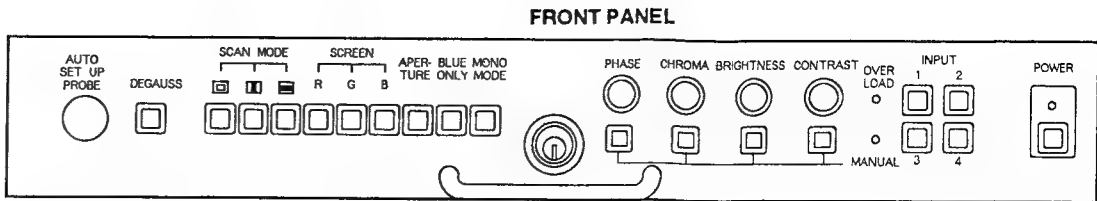
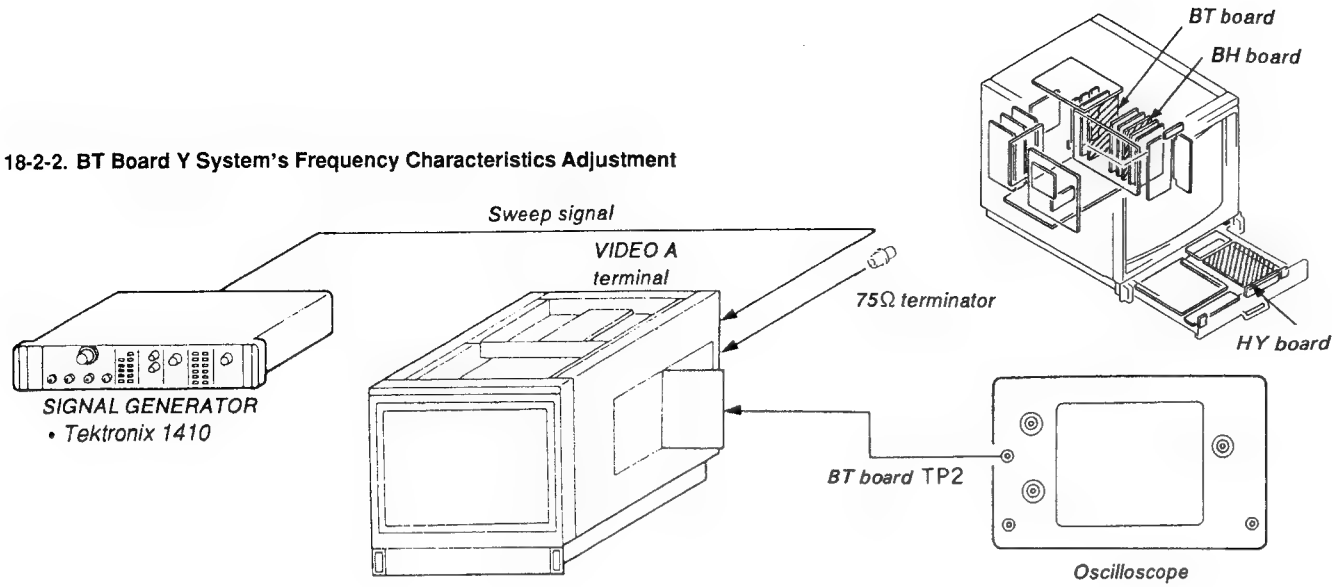


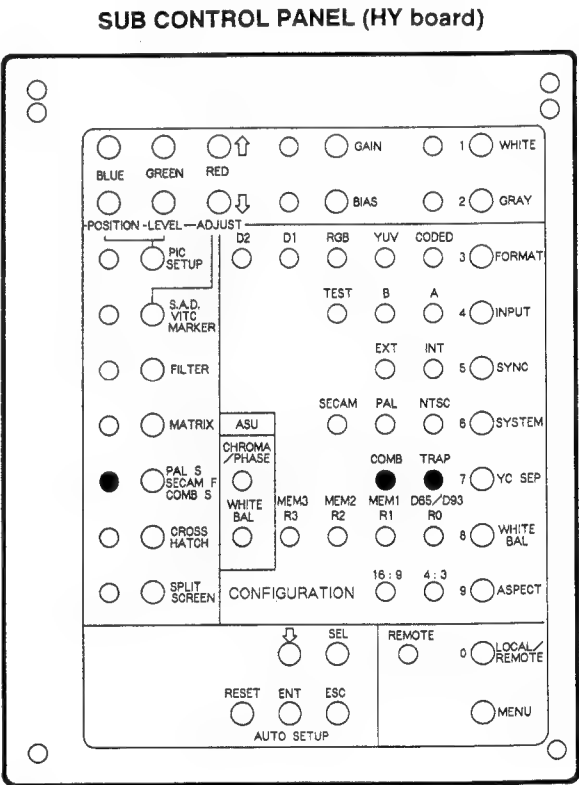
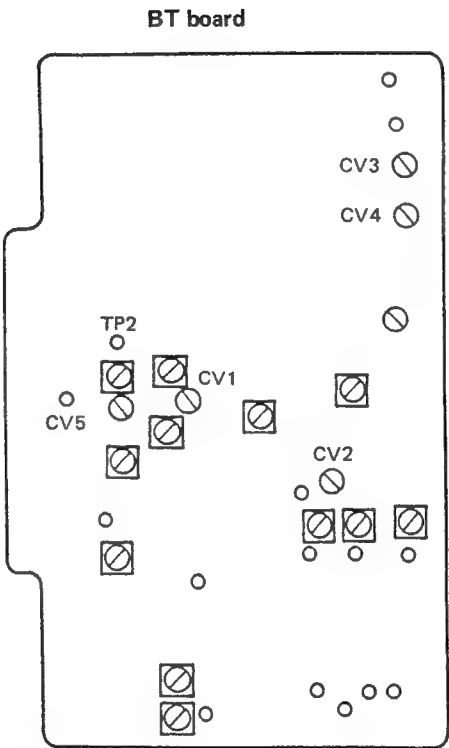
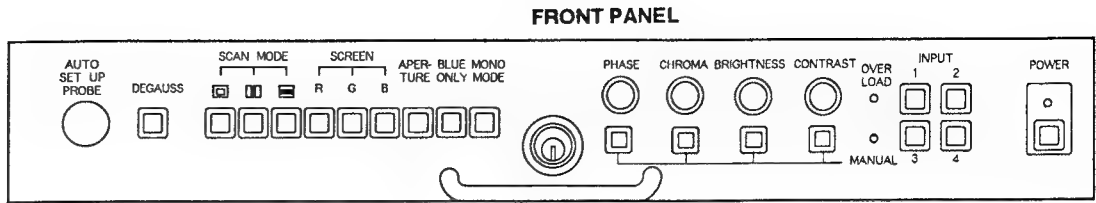
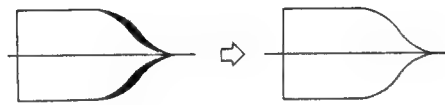
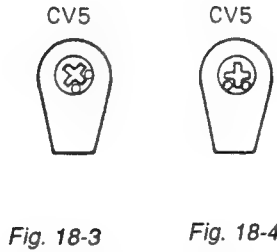
Fig. 18-2



18-2-2. BT Board Y System's Frequency Characteristics Adjustment

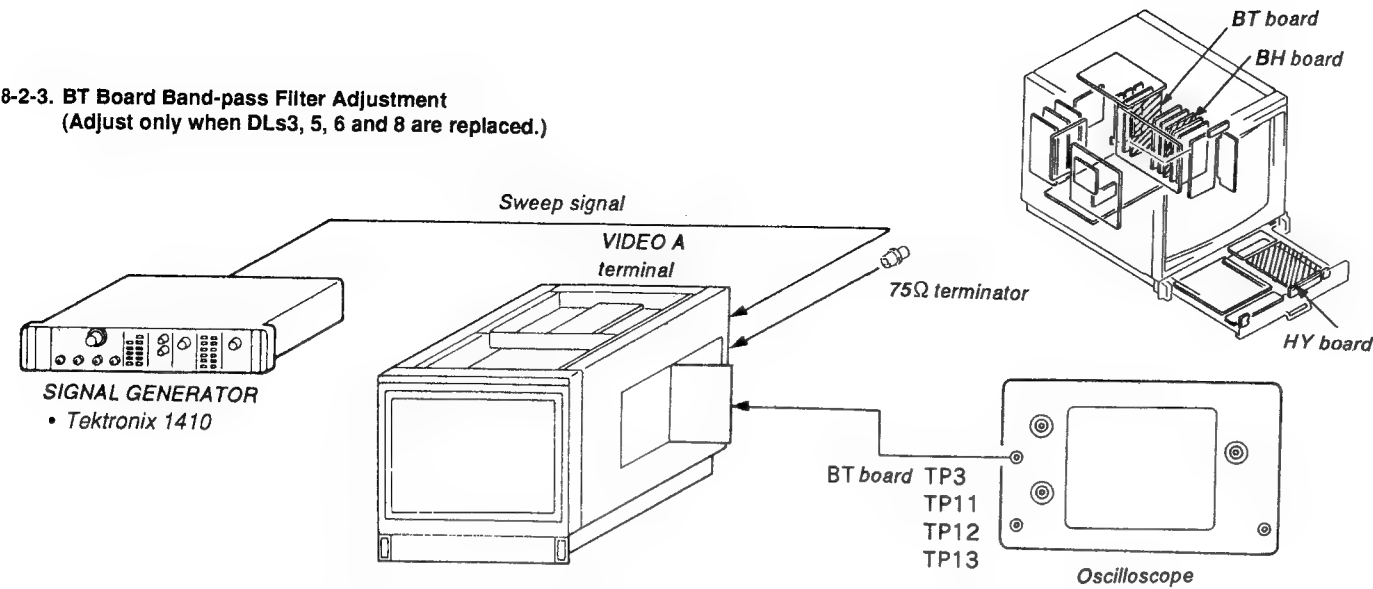


1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the COMB position.
3. Connect the oscilloscope to TP2 on the BT board.
4. Set CV5 to the position as shown in Fig. 18-3.
5. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
6. Adjust the frequency characteristics until it is made flat using CV1 (Y FREQ) on the BT board. If it cannot be properly adjusted by using CV1, use CV5 (Y FREQ).
7. Set the PAL S/SECAM F/COMB S button to the OFF.
8. Adjust the frequency characteristics until it is made flat using CV2 (1H Y FREQ) on the BT board.
9. Set CV3 (CLK PHASE) and CV4 (CLK PHASE) on the BT board to the position as shown in Fig. 18-4.
10. Adjust the clock phase until it becomes just as shown in Fig. 18-5 using CV3.
11. If it cannot be adjusted with CV3, adjust with CV4 by returning CV3 to the position of Fig. 18-4.





### 18-2-3. BT Board Band-pass Filter Adjustment (Adjust only when DLs3, 5, 6 and 8 are replaced.)



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the front panel to the ON.
3. Connect the oscilloscope to TP11.
4. Adjust the frequency characteristics using DL3 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
5. Connect the oscilloscope to TP12.
6. Adjust the frequency characteristics using DL6 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
7. Connect the oscilloscope to TP13.
8. Adjust the frequency characteristics using DL8 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
9. Connect the oscilloscope to TP3.
10. Adjust the frequency characteristics using DL5 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.

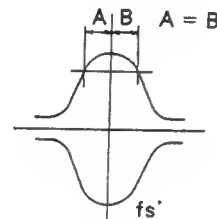
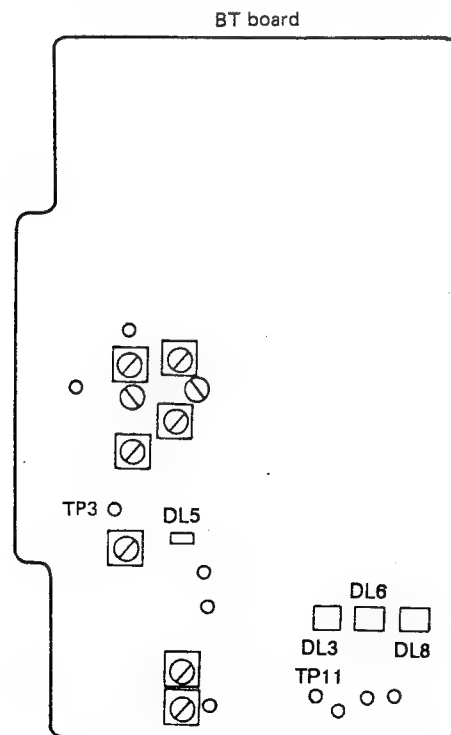
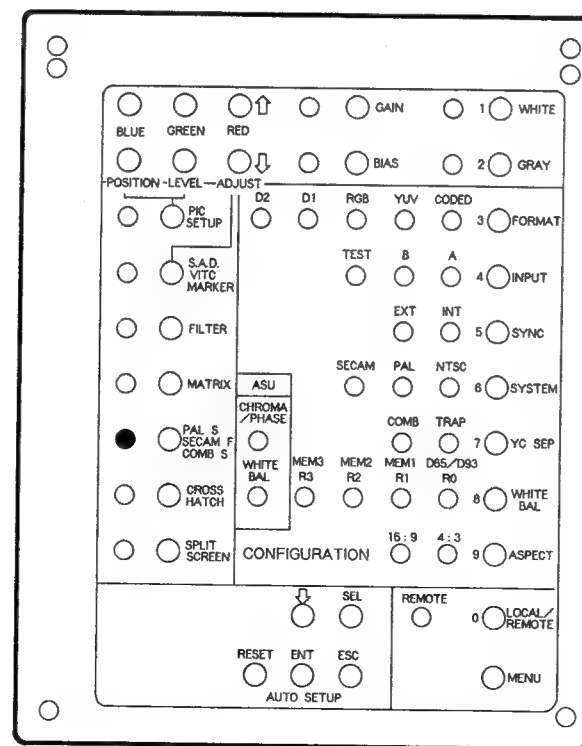


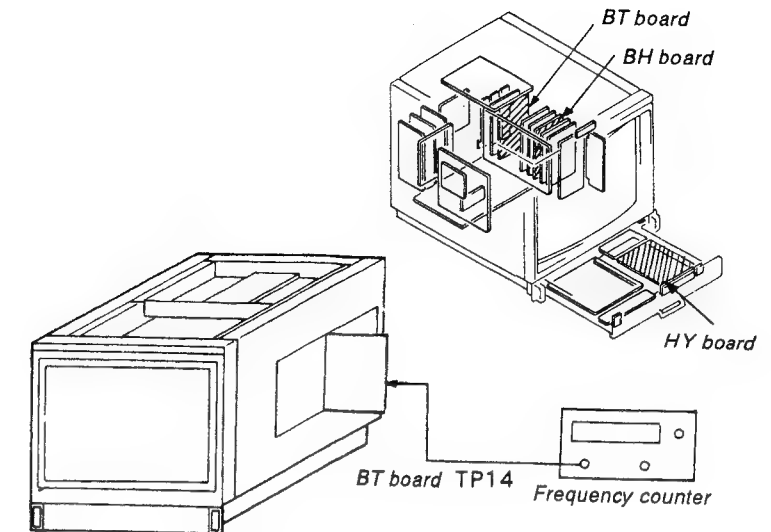
Fig. 18-6



### SUB CONTROL PANEL (HY board)

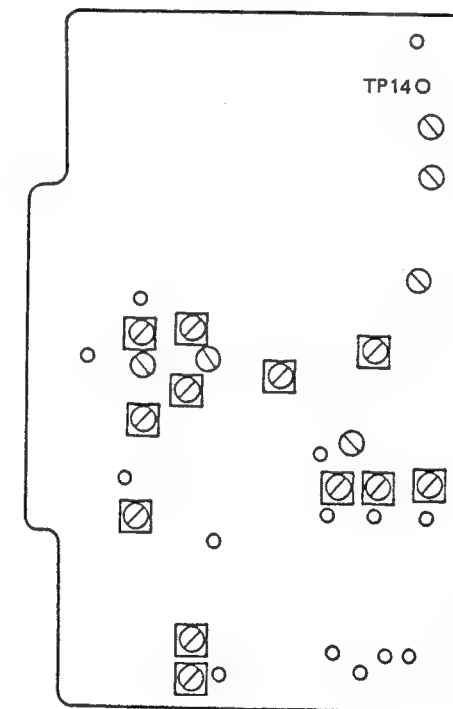


### 18-2-4. BT Board Clock to Adjustment

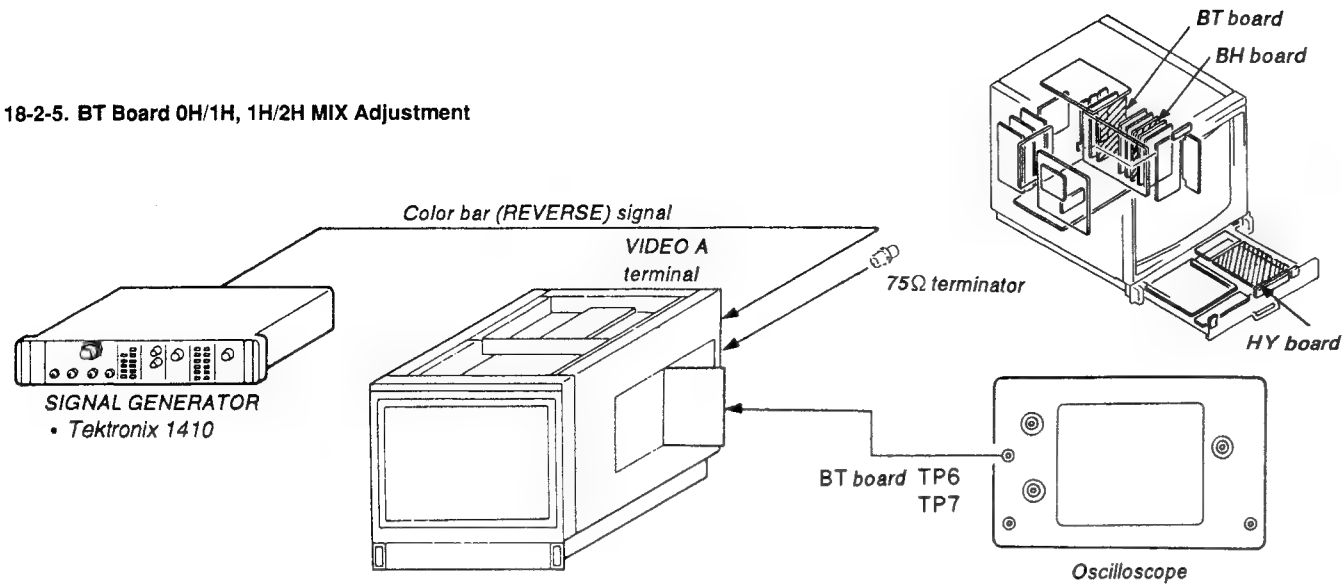


1. Connect the frequency counter to TP14.
2. Make adjustment as shown below using CV6 (CLK FREQ) on the BT board.  
•  $f_0 = 21.477 \text{ MHz}$

### BT board



18-2-5. BT Board 0H/1H, 1H/2H MIX Adjustment



1. Feed a color bar signal (REVERSE) to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP6 to magnify the signal inverted area.
3. Turn RV5 (0H/1H MIX LEVEL) and RV10 (0H/1H MIX PHASE) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.
4. Connect the oscilloscope to TP7.
5. Turn RV12 (1H/2H MIX PHASE) and RV11 (1H/2H MIX LEVEL) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.

Enlarged view of inverted signal section

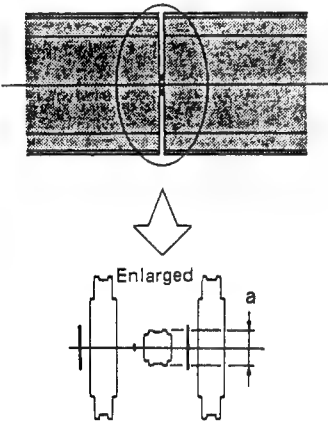
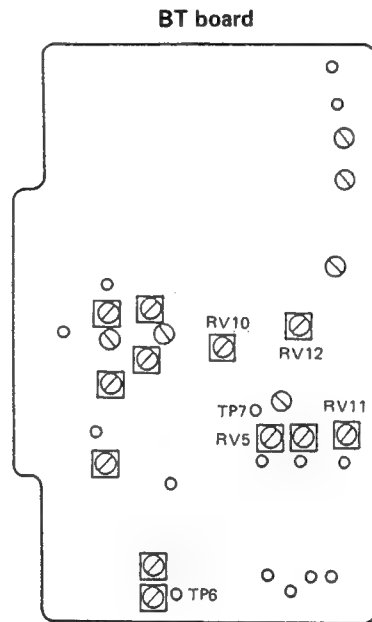
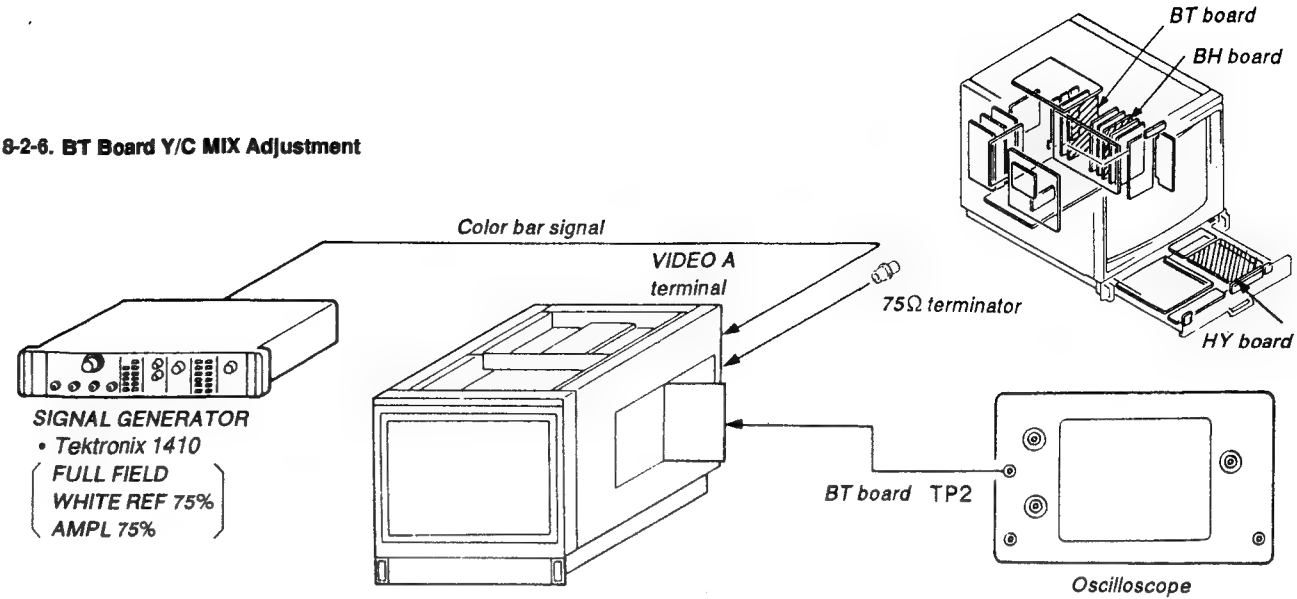


Fig. 18-7



18-2-6. BT Board Y/C MIX Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP2 on the BT board.
3. Set the PAL S/SECAM F/COMB S button on the sub control panel to the OFF.
4. Turn RV1 (Y/C MIX PHASE) and RV2 (Y/C MIX LEVEL) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.

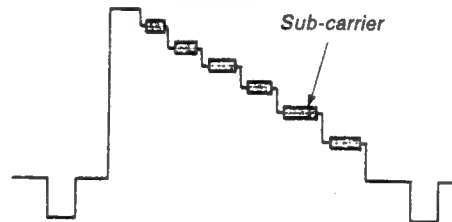
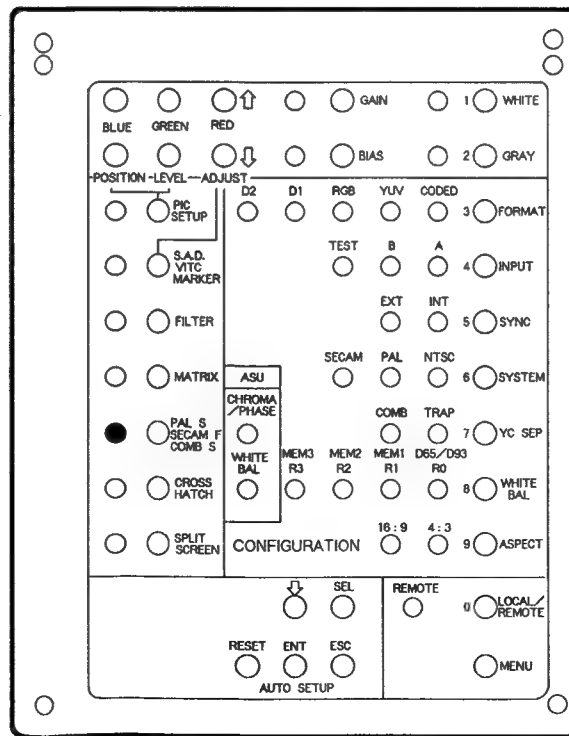


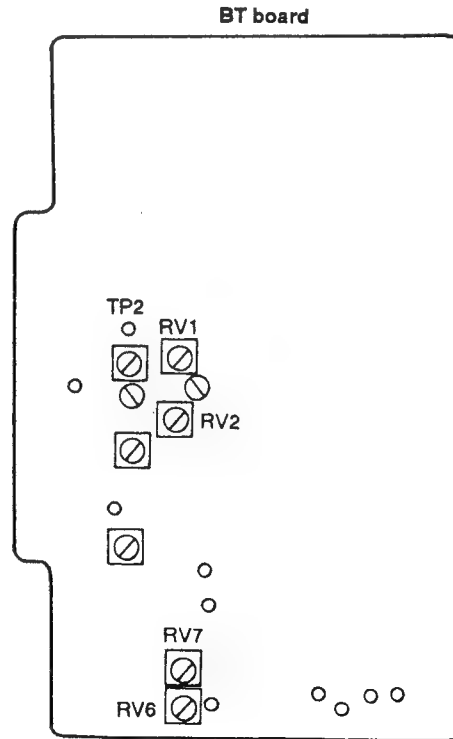
Fig. 18-8

SUB CONTROL PANEL (HY board)

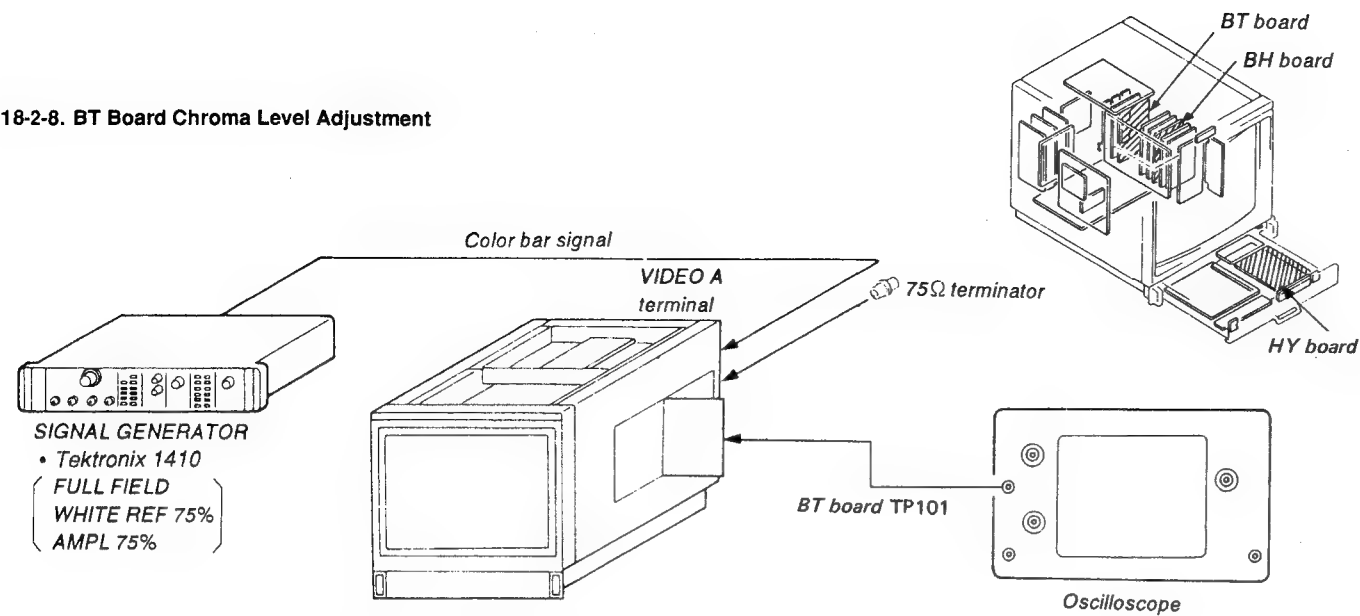


18-2-7. S COMB Adjustment

1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
3. Connect the oscilloscope to TP2 on the BT board.
4. Turn RV6 (S COMB C Level) and RV7 (S COMB C PHASE) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.



18-2-8. BT Board Chroma Level Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BT board.  
(DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion B (red) of Fig. 18-9 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-9 to the center of the oscilloscope using RV8 (C OUTPUT LEVEL) on the BT board.

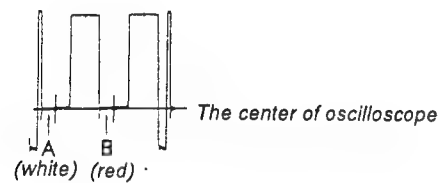
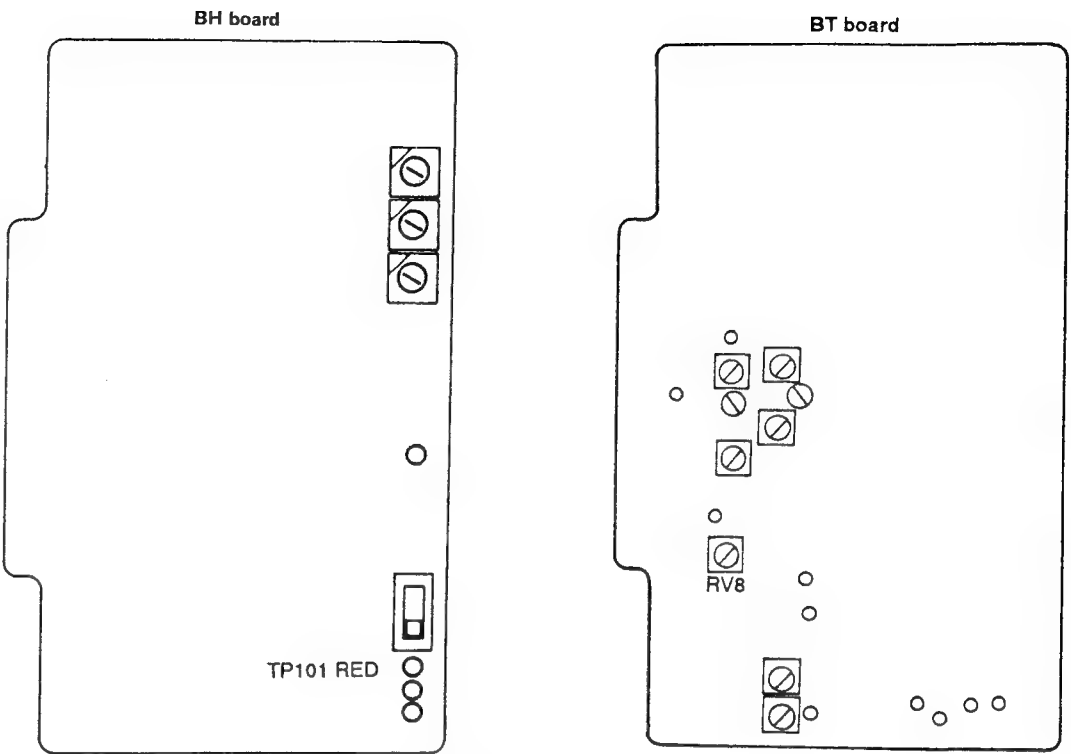
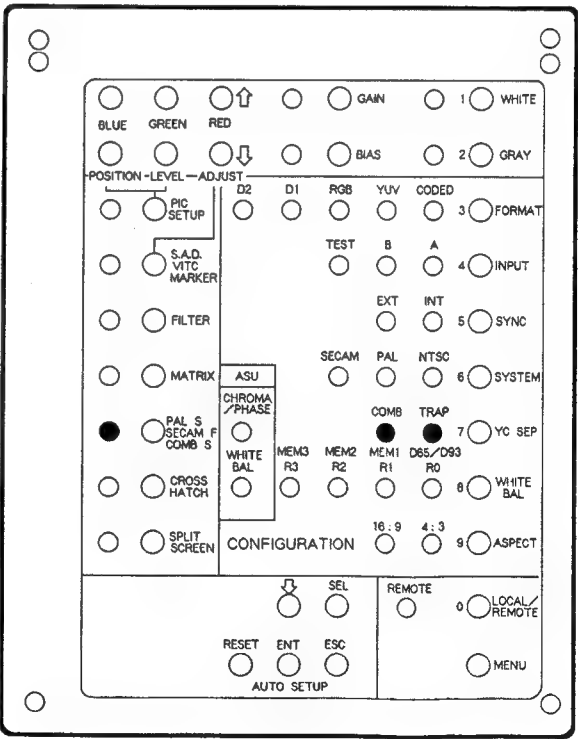


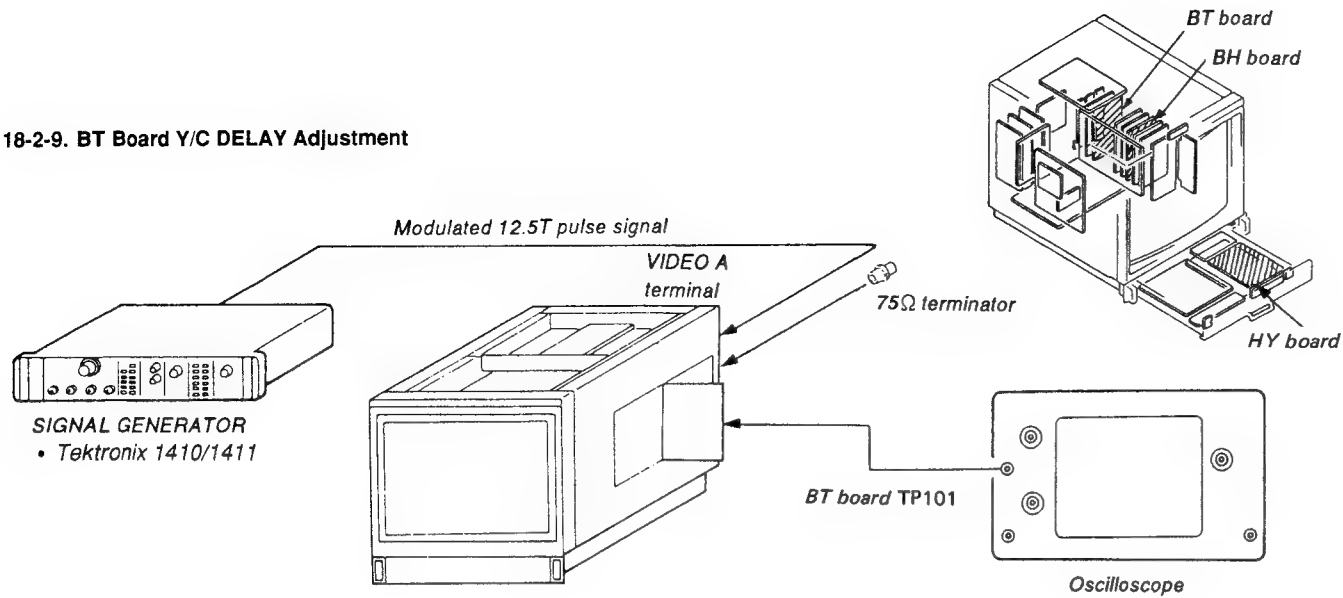
Fig. 18-9



SUB CONTROL PANEL (HY board)



18-2-9. BT Board Y/C DELAY Adjustment



1. Feed a 12.5T pulse signal to the VIDEO A terminal of this set.
2. Set the PAL S/SECAM F/COMB S button to the ON.
3. Connect the oscilloscope to TP101 on the BH board.
4. Turn the CHROMA MANUAL control (on the front panel) until the chroma signal is adjusted as shown in Fig. 18-10.
5. After adjustment, turn RV4 (Y/C DELAY) on the BT board until the waveform is symmetrical.

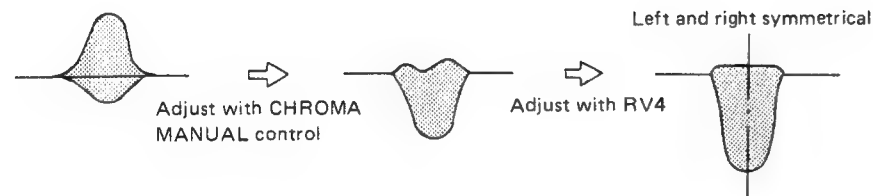
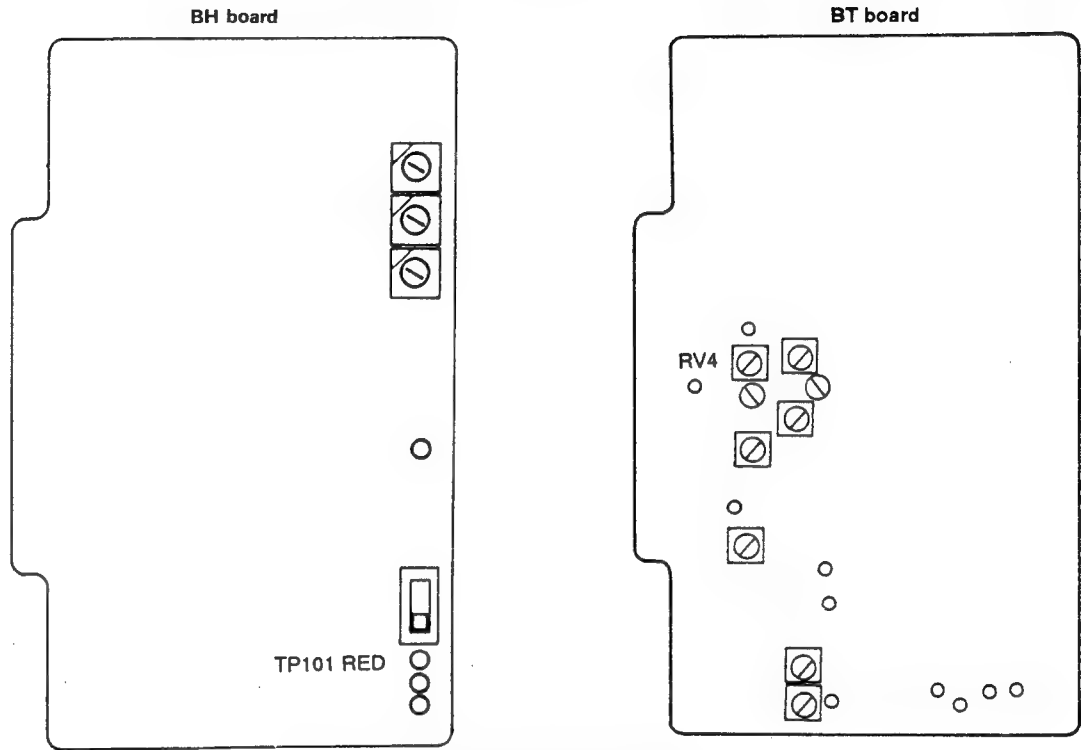
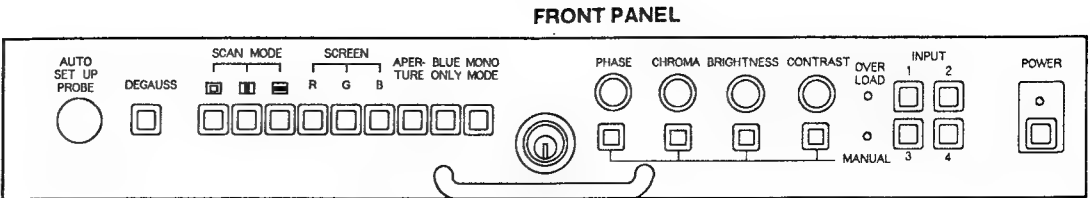
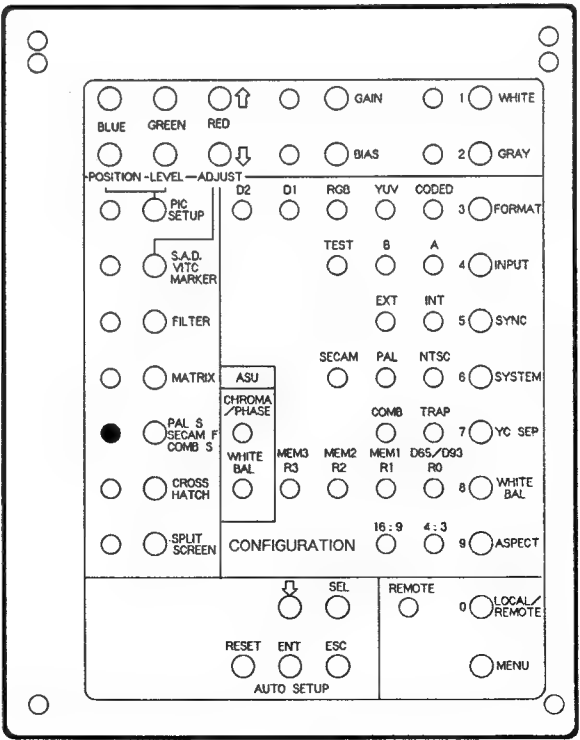


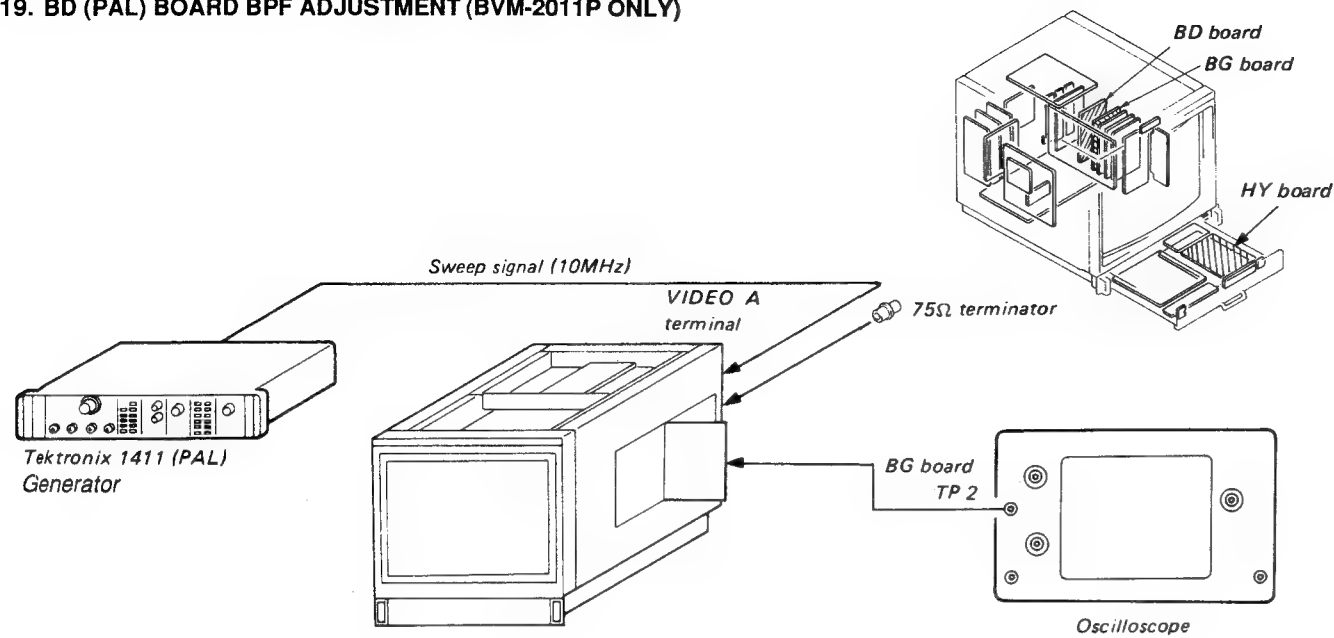
Fig. 18-10



SUB CONTROL PANEL (HY board)



19. BD (PAL) BOARD BPF ADJUSTMENT (BVM-2011P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
1. Input SWEEP signal (10MHz) to the VIDEO A terminal of the set.
  2. Connect an oscilloscope to the TP2 on the BG board.
  3. Make the V/div of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 19-1.

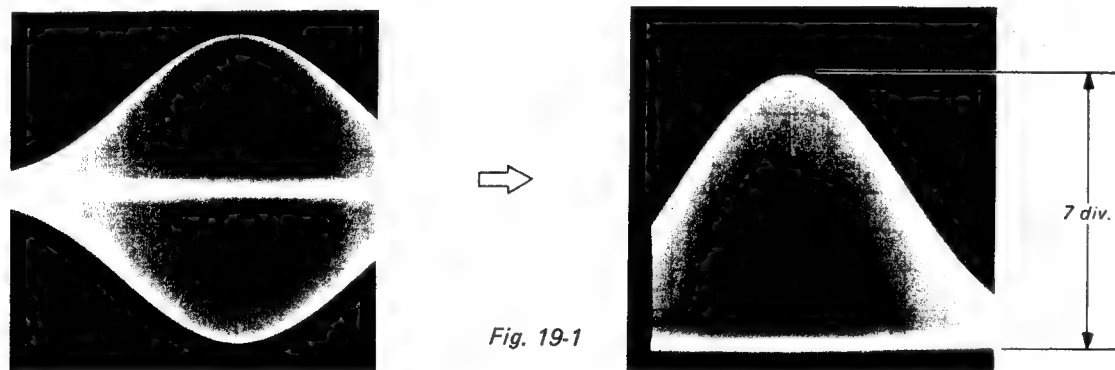


Fig. 19-1

4. Adjust L3 on the BD board so that A is equal to B as shown in Fig. 8-2.

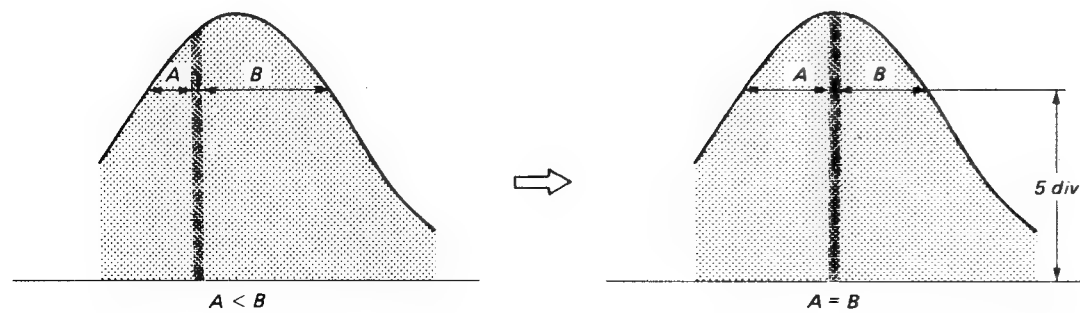
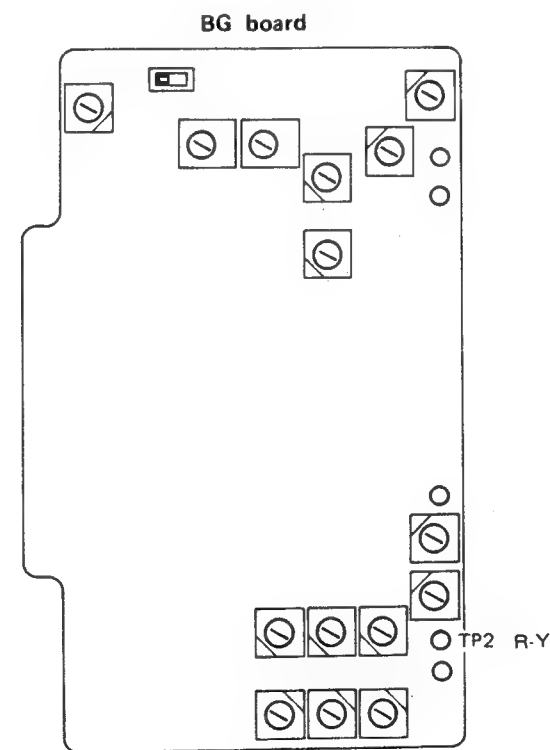
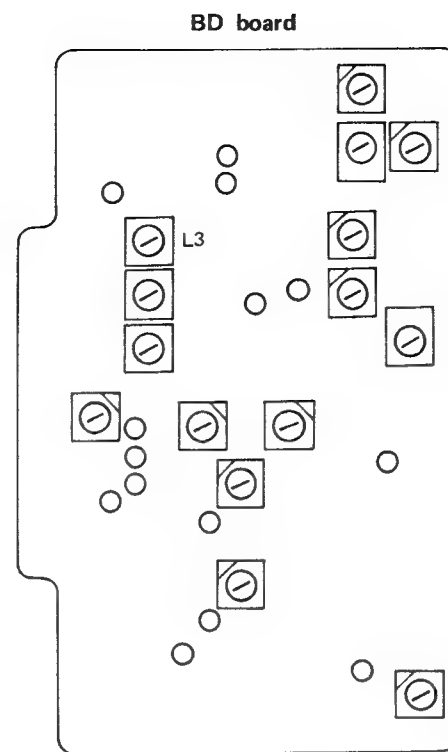
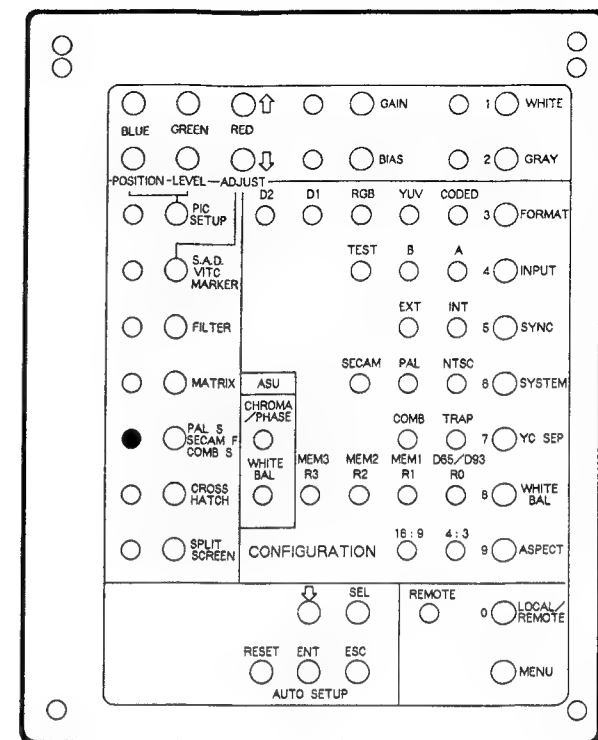


Fig. 19-2

4-63



SUB CONTROL PANEL (HY board)



20. BD (PAL) BOARD PHASE SHIFT ADJUSTMENT (BVM-2011P ONLY)

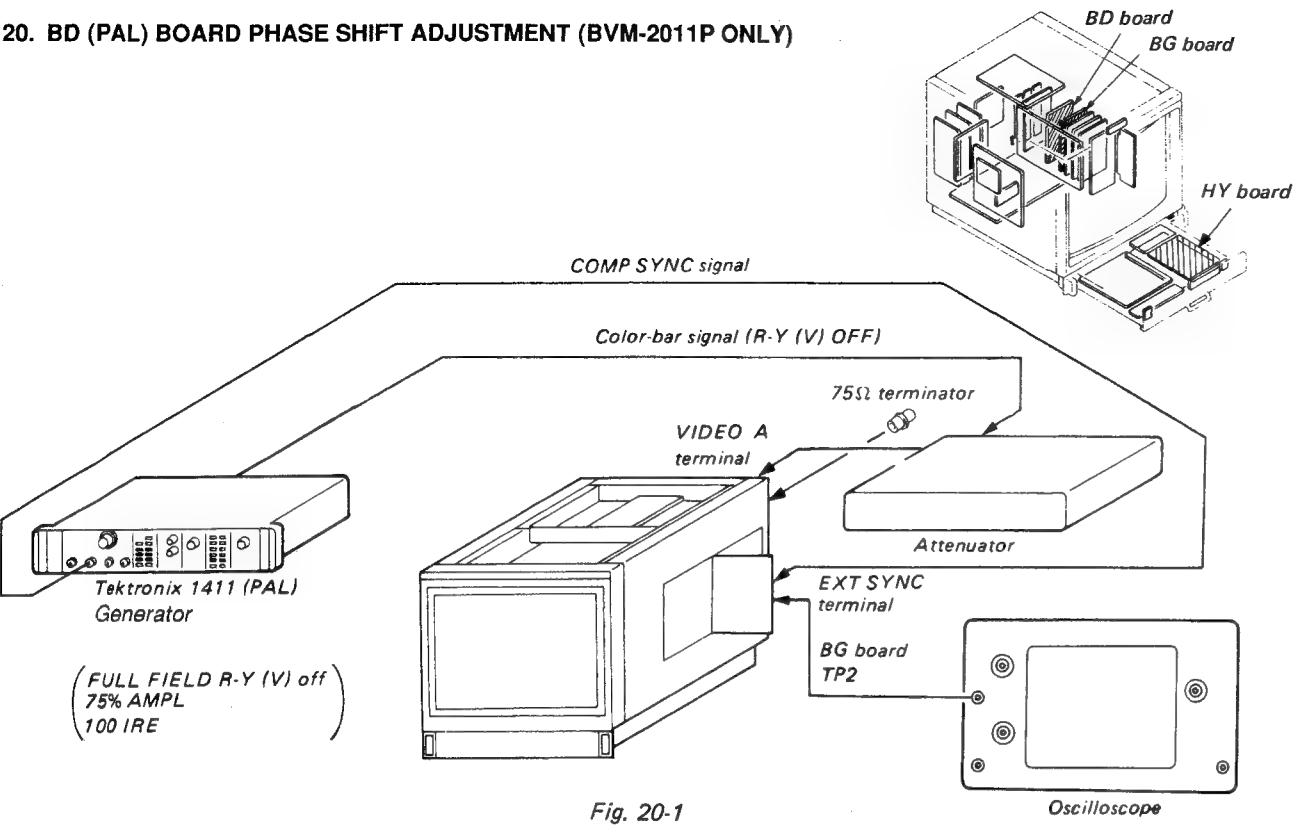


Fig. 20-1

- SYNC button (SUB CONTROL PANEL)..... EXT
  - PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
  - RV2 (BD BOARD).....MECHANICAL CENTER
  - CV1 (BD BOARD).....MECHANICAL CENTER
  - CV2 (BD BOARD).....MECHANICAL CENTER
1. Complete the connection as shown in Fig. 20-1.
  2. Connect an oscilloscope to the TP2 on the BG board.
  3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 20-2.

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD board so that the output waveform becomes flat as shown in Fig. 20-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

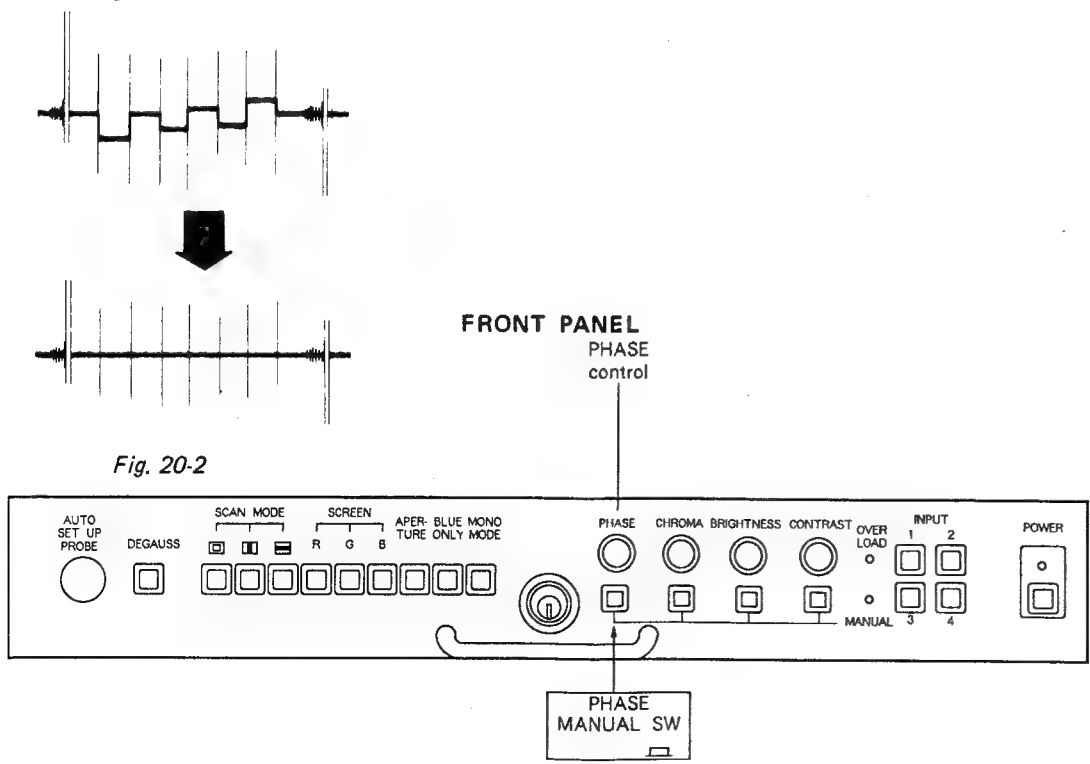
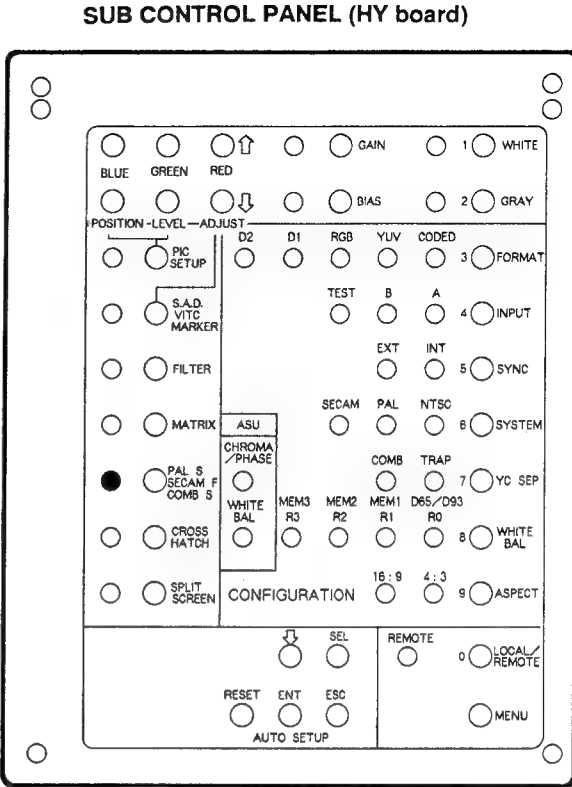
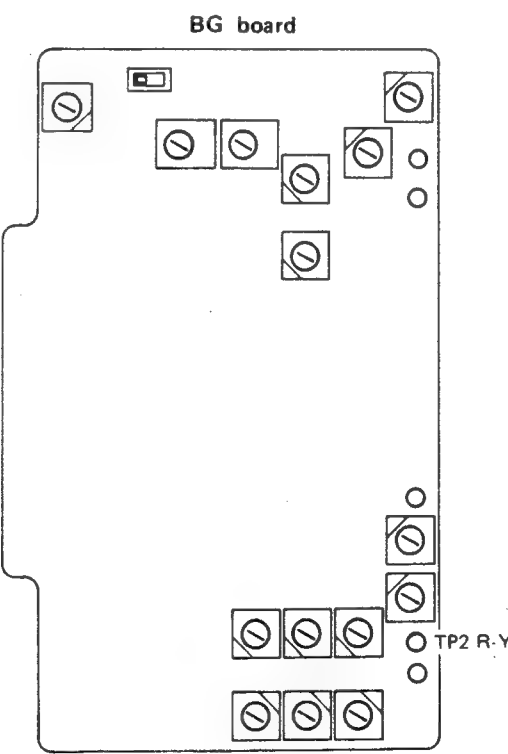
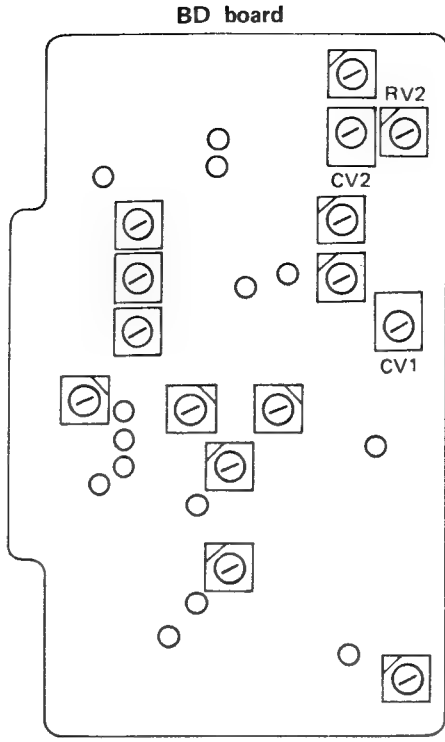
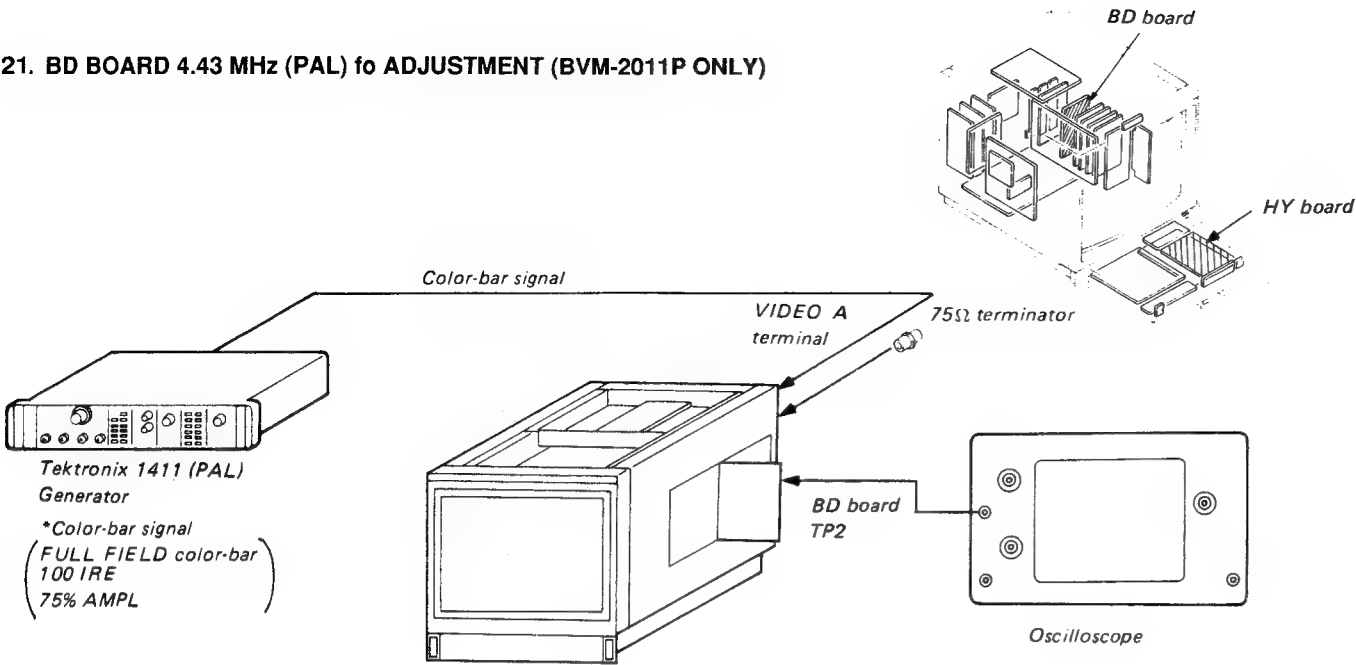


Fig. 20-2



21. BD BOARD 4.43 MHz (PAL) to ADJUSTMENT (BVM-2011P ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD board.
3. Short-circuit between TP11, 12 of BD board with a jumper wire.
4. Adjust CV2 of BD board so that the output waveform is shifted slowly as shown in Fig. 21-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD board.

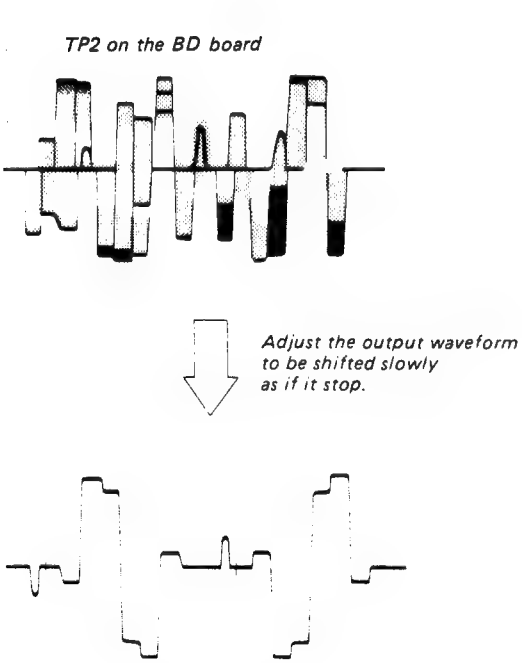
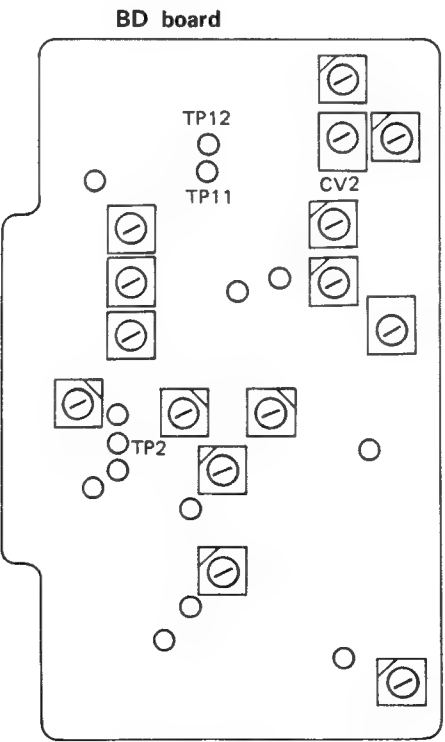
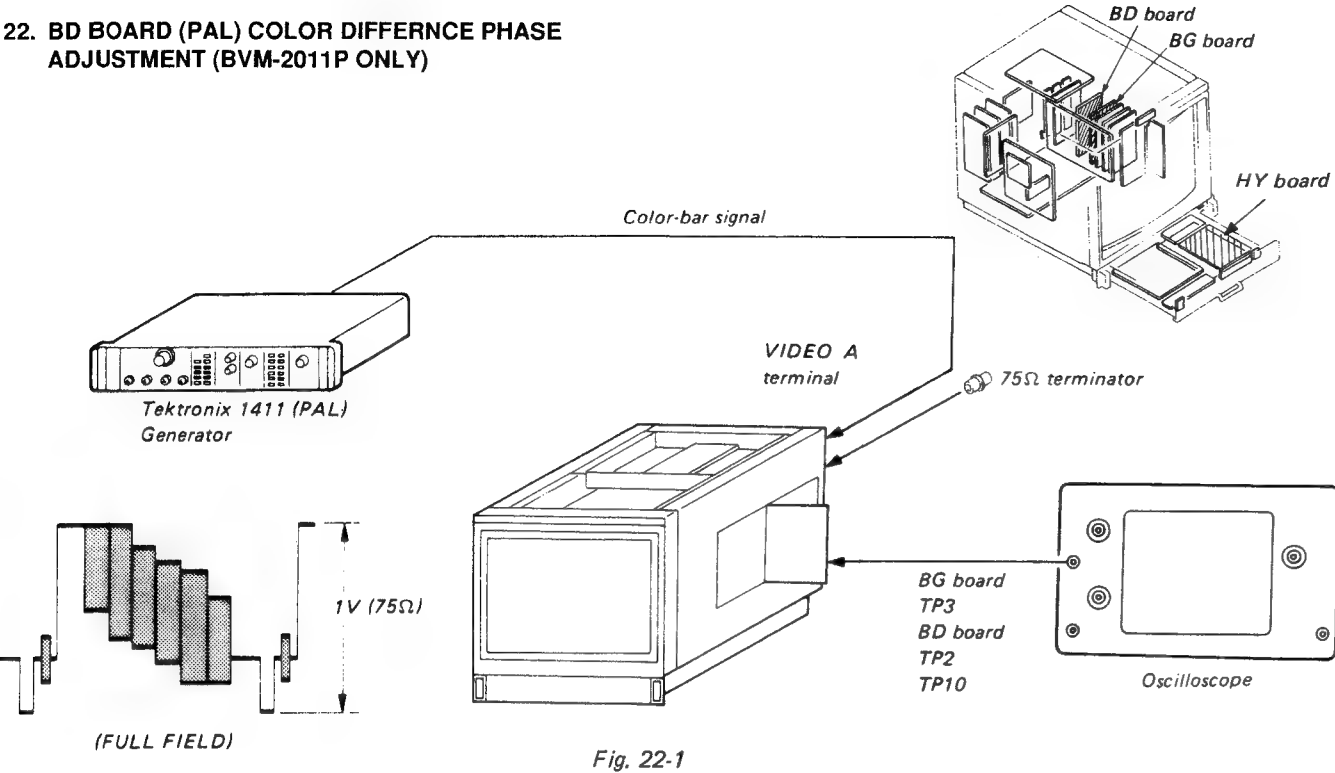


Fig. 21-1



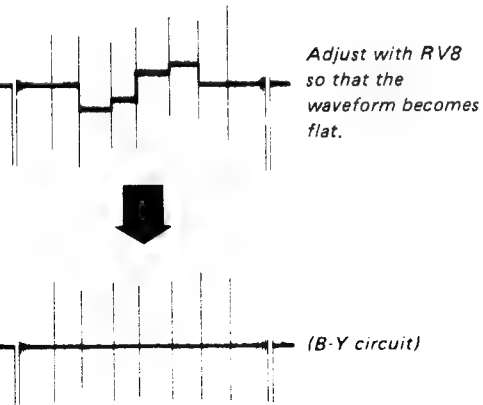
22. BD BOARD (PAL) COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-2011P ONLY)



1. Complete the connections as shown in Fig. 22-1.
2. Turn on the power of this monitor. Set the INPUT switch to the 1 position, the SYNC switch to the INT position, and the PAL S/SECAM F/COMB S button to the ON.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD board so that the output waveform is flat. (See Fig. 22-2.)



Quad Adjustment

5. Connect the oscilloscope probe to TP on the BD board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD board so that the output waveform is flat. (See Fig. 22-3.)
6. Repeat the steps 3 to 6.

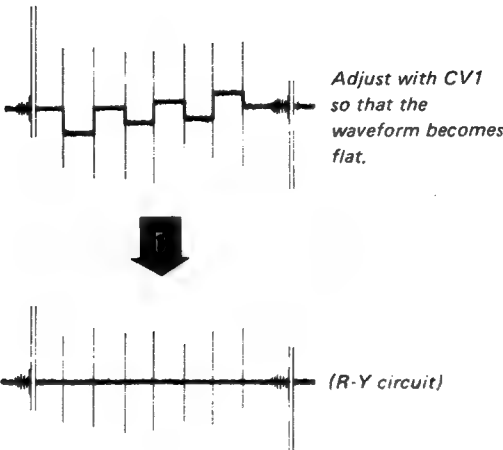
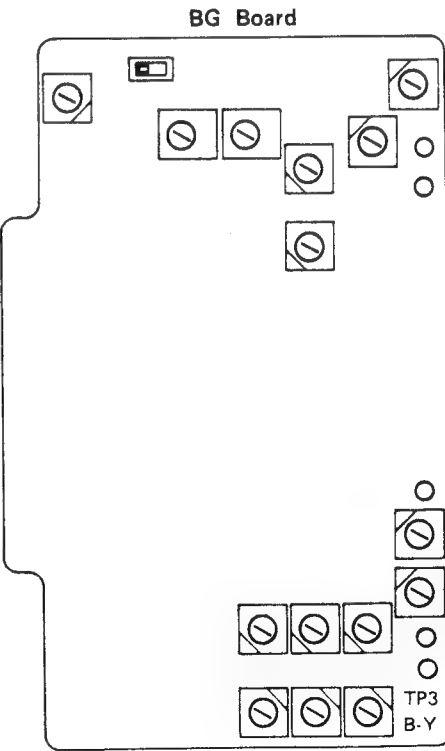
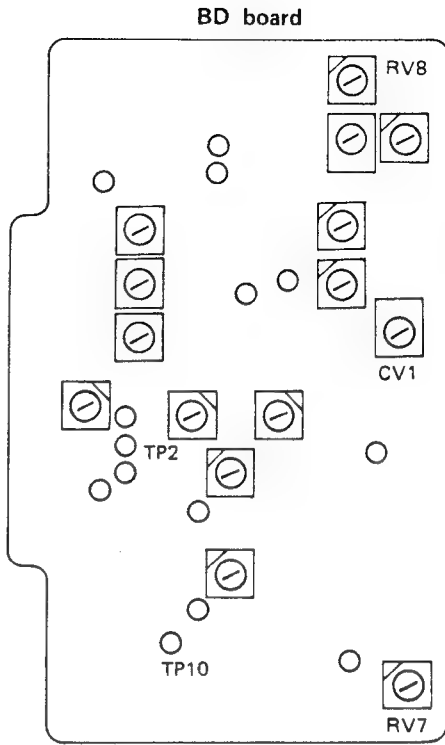


Fig. 22-3

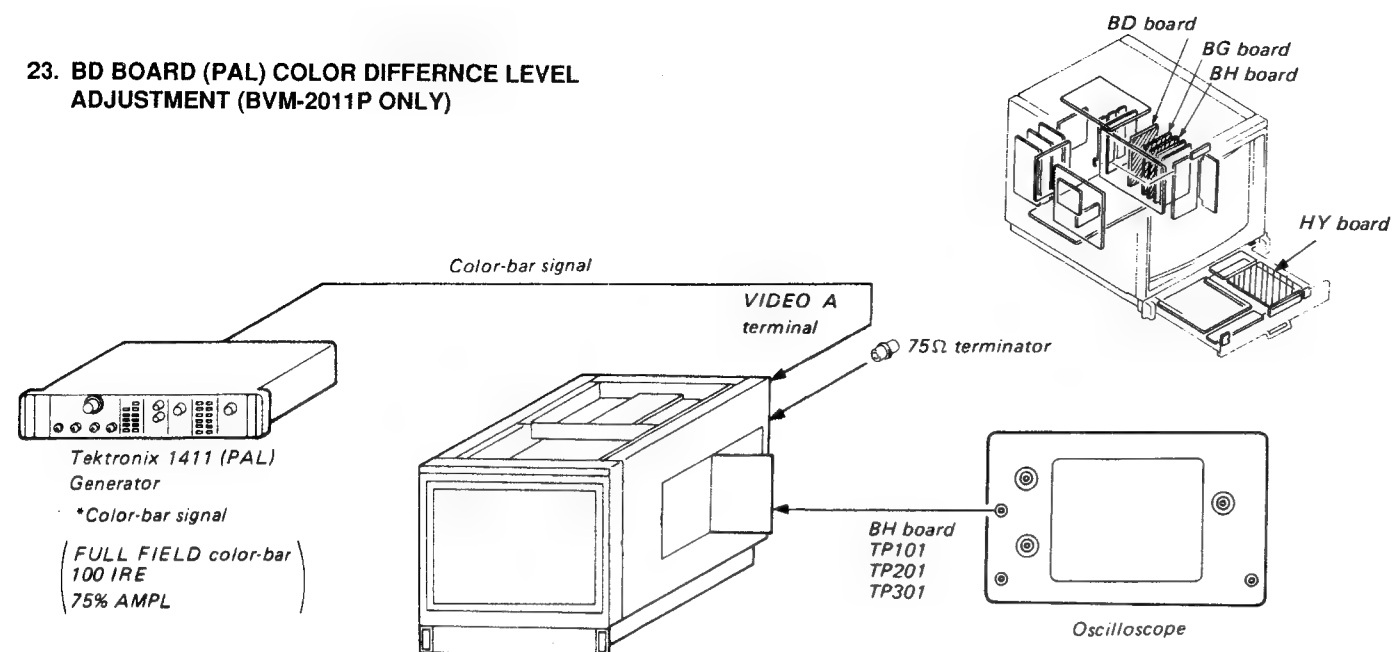
PAL D Phase Adjustment

7. Set the PAL S/SECAM F/COMB S button to the OFF and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 22-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD board to the set, without using the extension board.

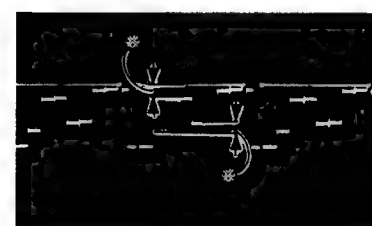




### 23. BD BOARD (PAL) COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-2011P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
- 1. Input color-bar signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP101 of BH board.
- 3. Adjust RV3 of BD or BM board so that the levels with \* is flat as shown in Fig. 23-1.

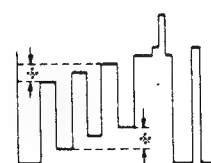


TP101 R OUT

Fig. 23-1

\* Adjust the levels with \* to be flat respectively using RV3 of BD board

- 4. Connect an oscilloscope to the TP301 of BH board.
- 5. Adjust RV4 of BD board so that the output waveform as shown in Fig. 23-2.



TP301 B OUT

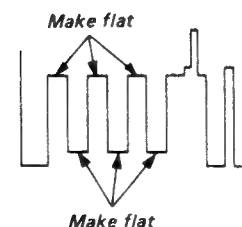
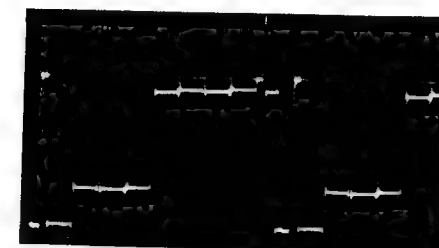


Fig. 23-2

- 6. Connect an oscilloscope to the TP201 of BH board.
- 7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 23-3.



TP201 G OUT

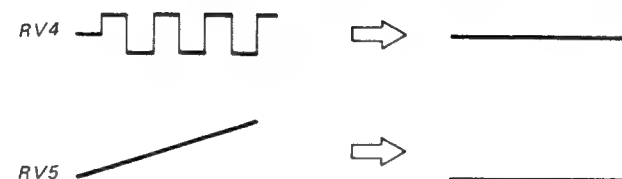
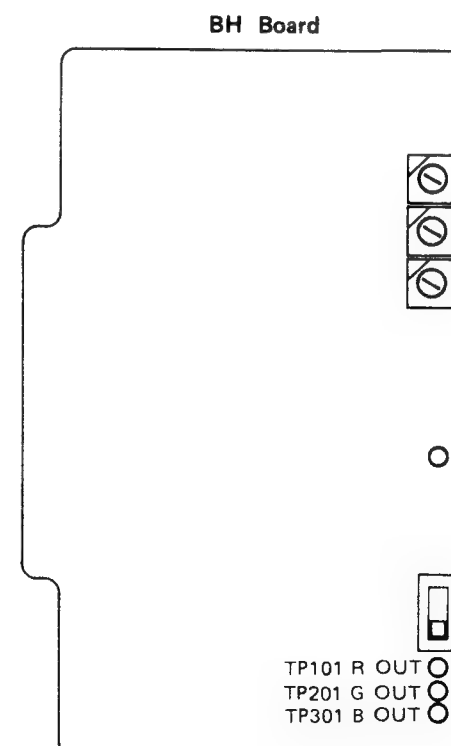
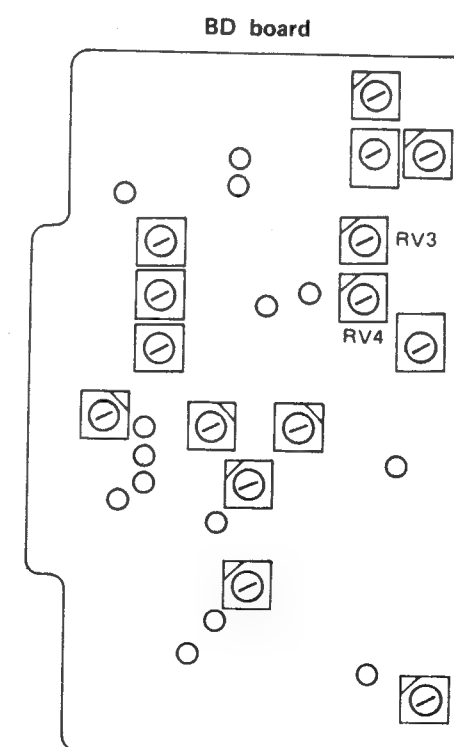
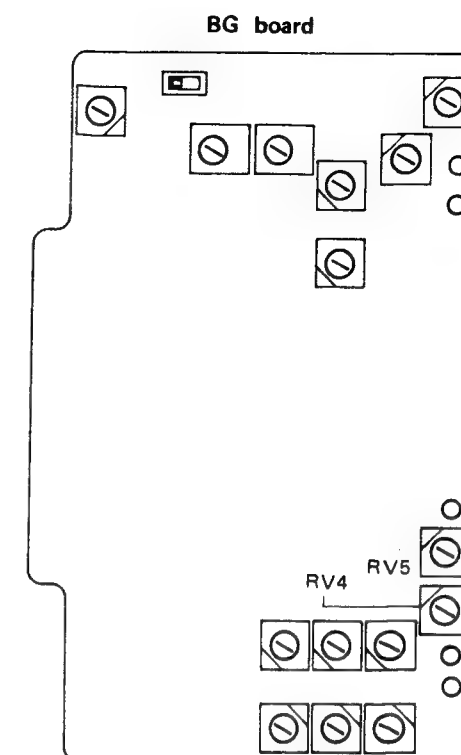


Fig. 23-3



24. BD BOARD (PAL) PAL-D GAIN AND CCD BIAS  
ADJUSTMANT (BVM-2011P ONLY)

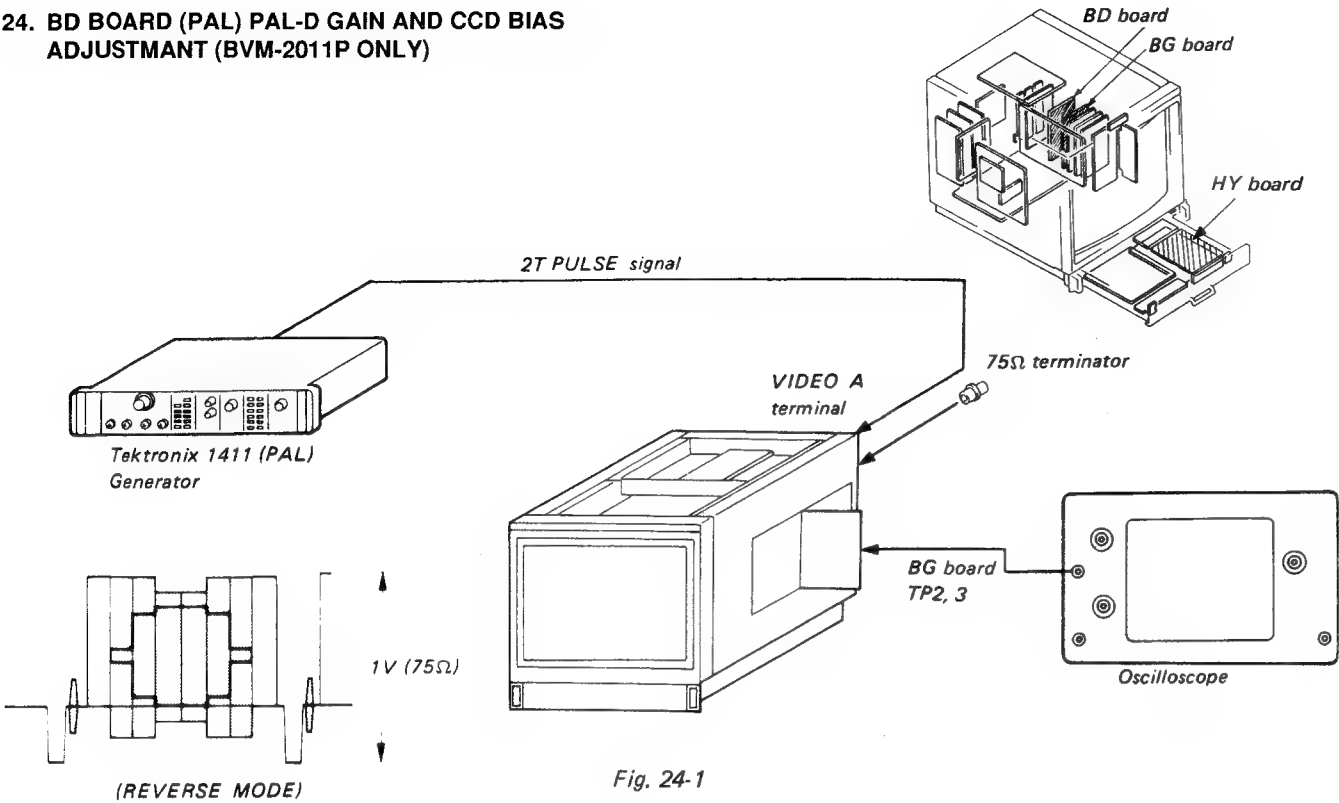


Fig. 24-1

• PAL S/SECAM F/COMB S button  
(SUB CONTROL PANEL) ..... OFF

1. Complete the connection as shown in Fig. 24-1.  
Turn on the power of this monitor. Set the INPUT switch to the 1 position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP2 on the BG board.
3. Turn RV5 and RV6 on the BD board fully clockwise.
4. By observing the waveform shown in Fig. 24-2, adjust RV9 on the BD board so that it becomes A=B.
5. Adjust RV5 on the BD board so that the waveform shown in Fig. 24-2 becomes flat.
6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 24-3.
7. Adjust RV10 on the BD board so that the waveform of the oscilloscope becomes A=B.
8. Adjust RV6 on the BD board so that the waveform shown in Fig. 24-3 becomes flat.

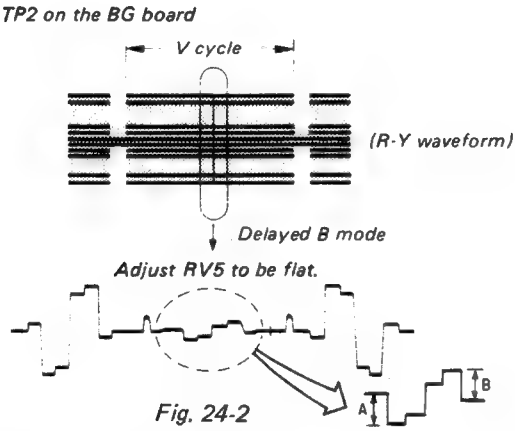


Fig. 24-2

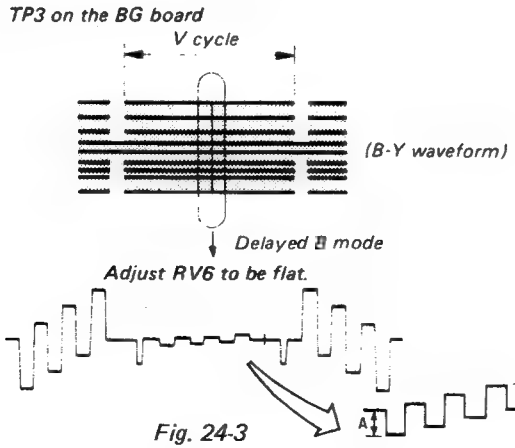
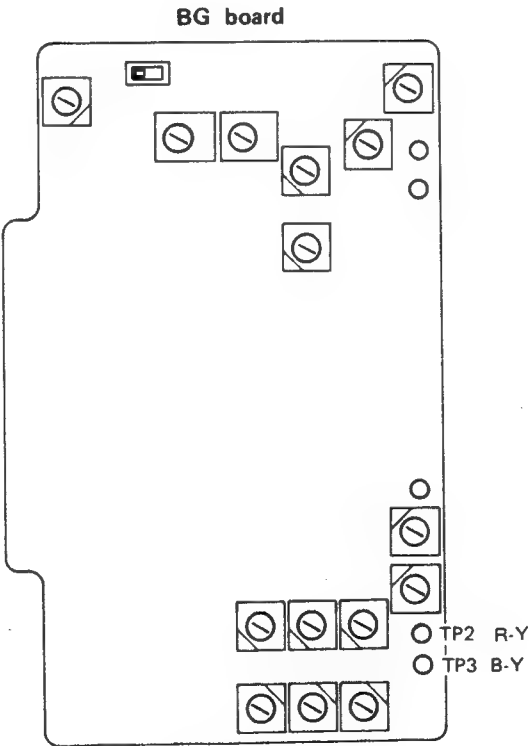
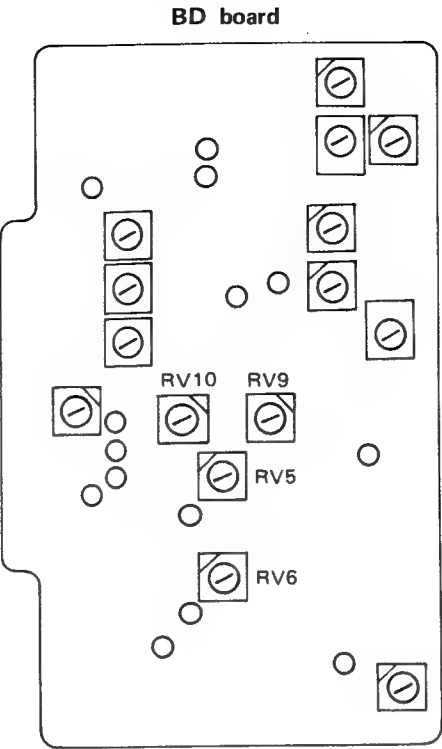
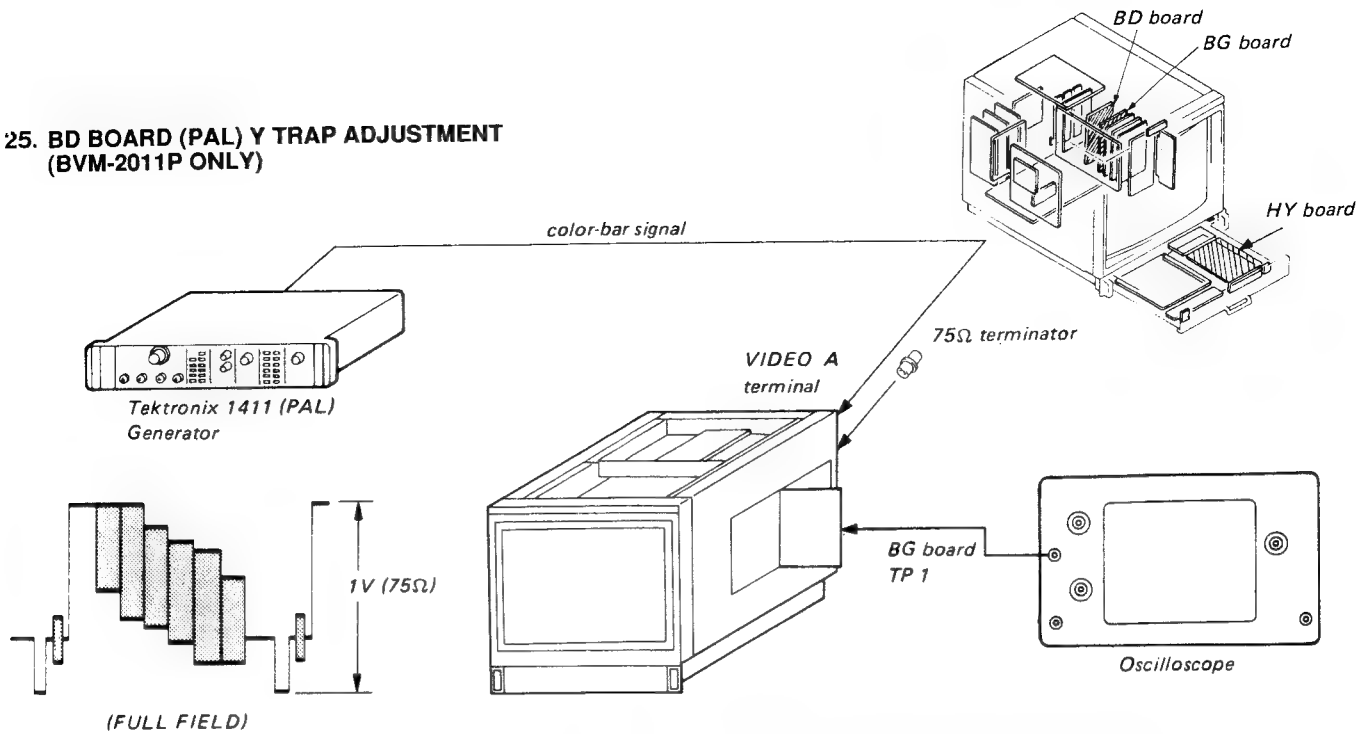


Fig. 24-3



## 25. BD BOARD (PAL) Y TRAP ADJUSTMENT (BVM-2011P ONLY)



1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BD board so that 4.43 MHz (PAL) subcarrier is minimum as shown in Fig. 25-1.

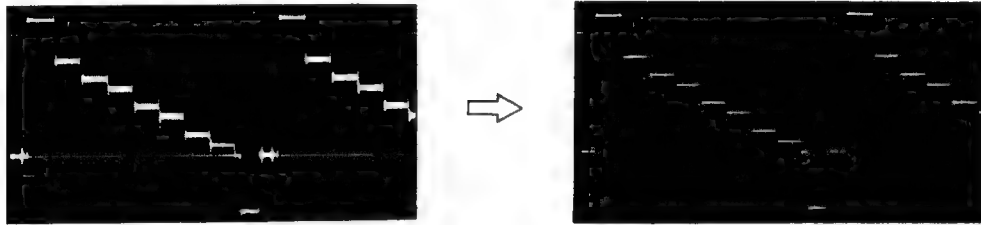
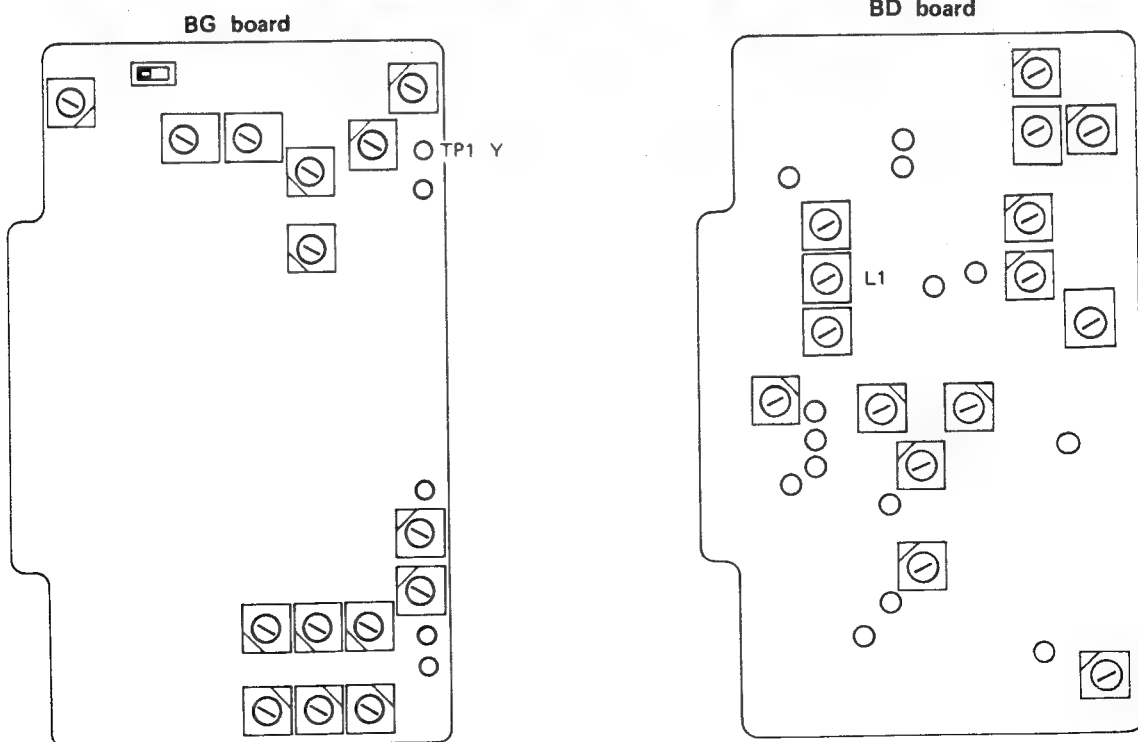
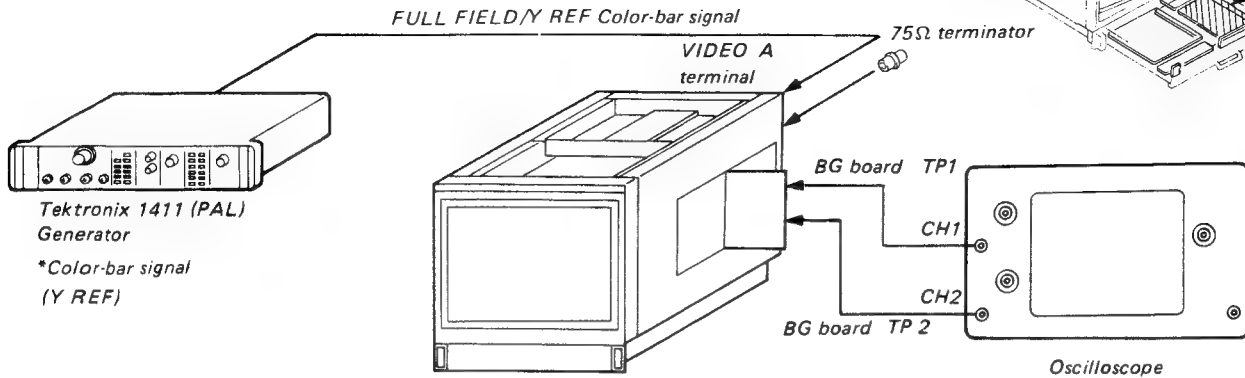
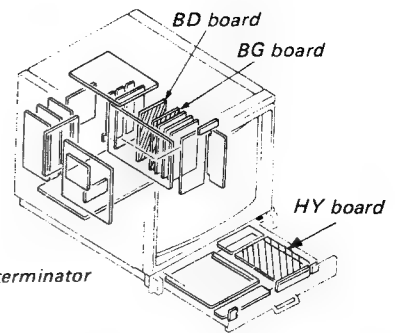


Fig. 25-1



## 26. BD BOARD (PAL) DELAY TIME ADJUSTMENT (BVM-2011P ONLY)



• PAL S/SECAM F/COMB S button (SUB CONTROL PANEL) ..... ON

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.

2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BD board so that output waveform as shown in Fig. 26-1.

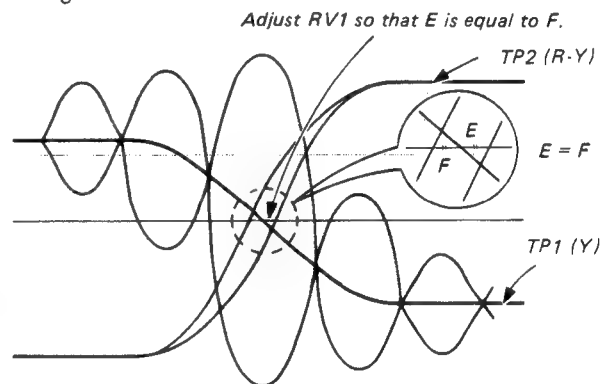
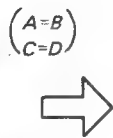
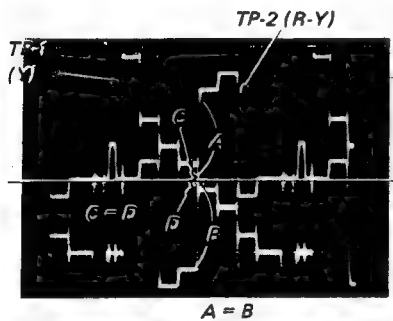
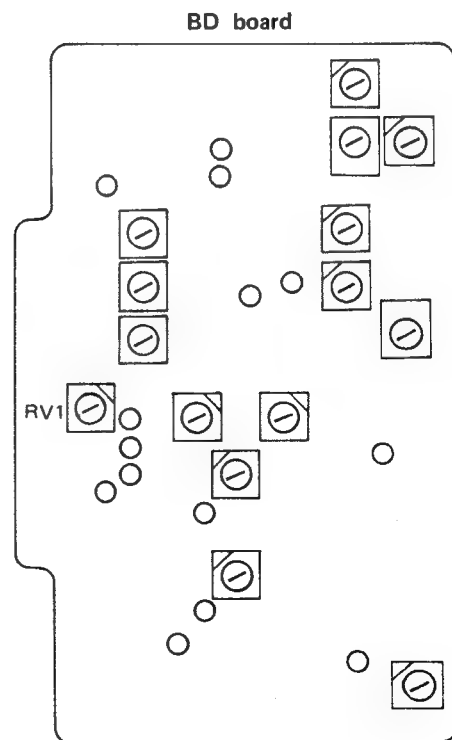
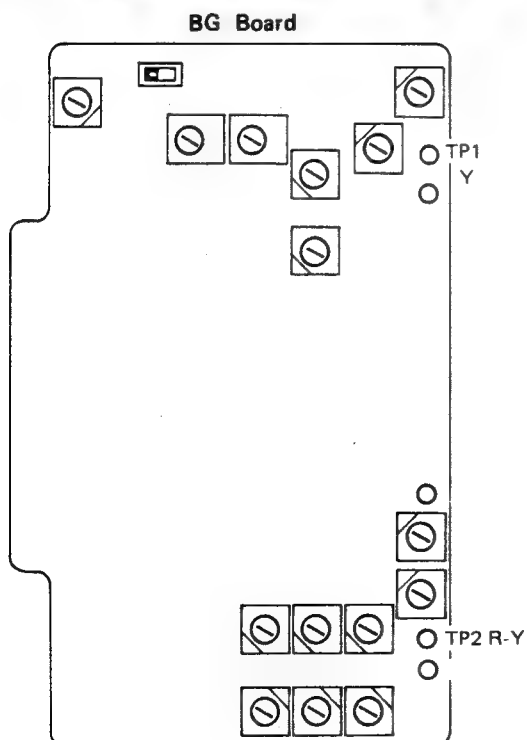
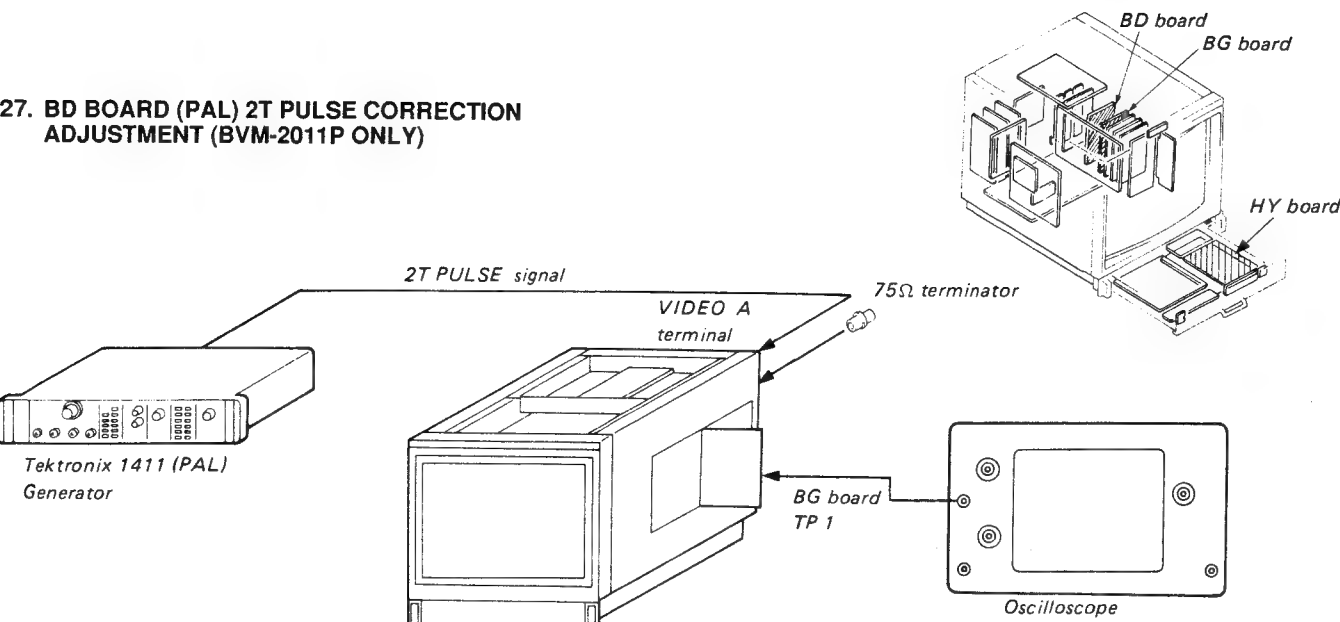


Fig. 26-1



27. BD BOARD (PAL) 2T PULSE CORRECTION  
ADJUSTMENT (BVM-2011P ONLY)



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD or BM board so that A is equal to B as shown in Fig. 27-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 27-1.

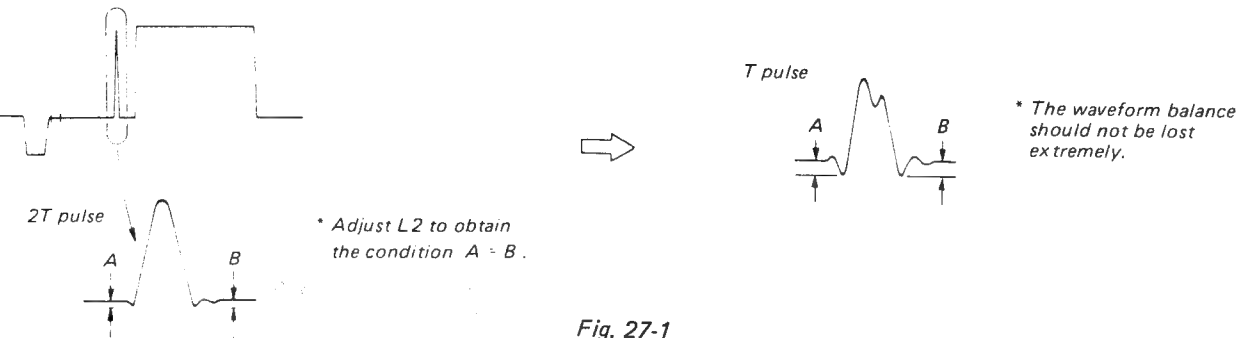
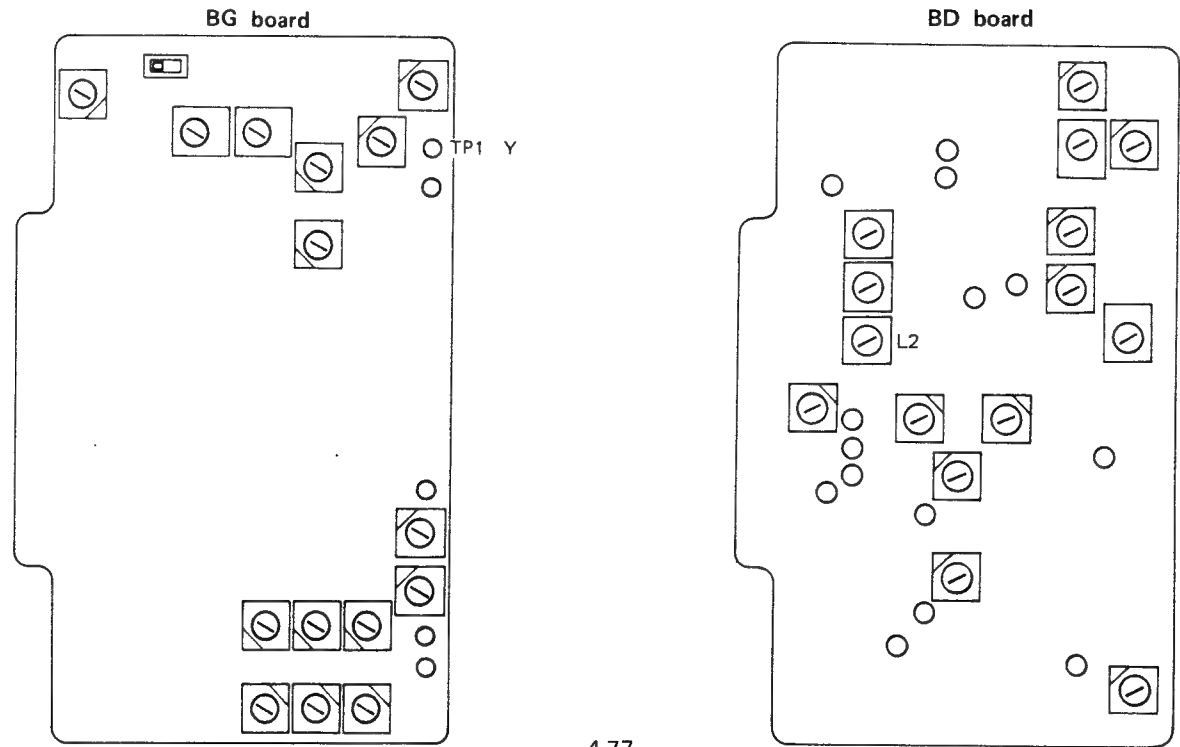
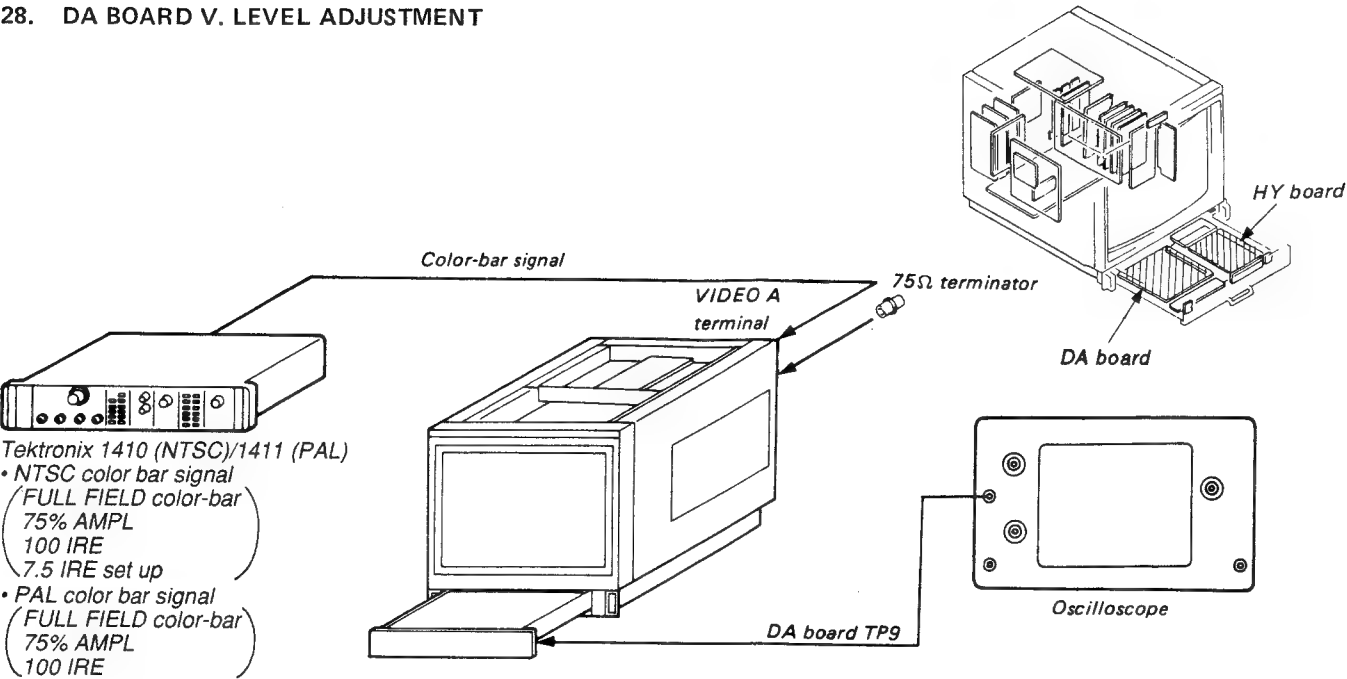


Fig. 27-1



28. DA BOARD V. LEVEL ADJUSTMENT



**PAL**

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP9 on the DA board.
3. Adjust RV18 on the DA board so that output waveform is 12.0Vp-p as shown in Fig. 28-1.

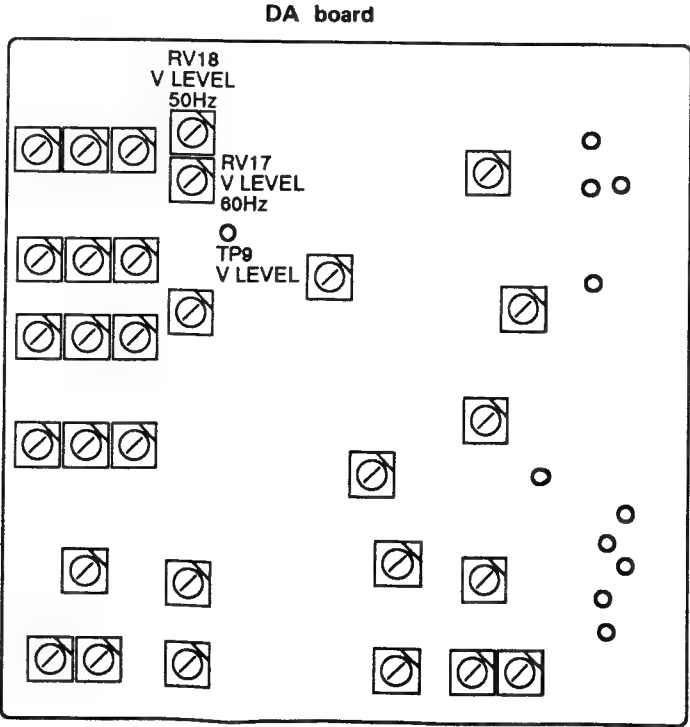
The following adjustment is required when a NTSC system signal is received.

**NTSC**

4. Input color-bar signal (TEK-1410) to the VIDEO A terminal of the set.
5. Connect an oscilloscope to the TP9 on the DA board.
6. Adjust RV17 on the DA board so that output waveform is 12.0Vp-p.

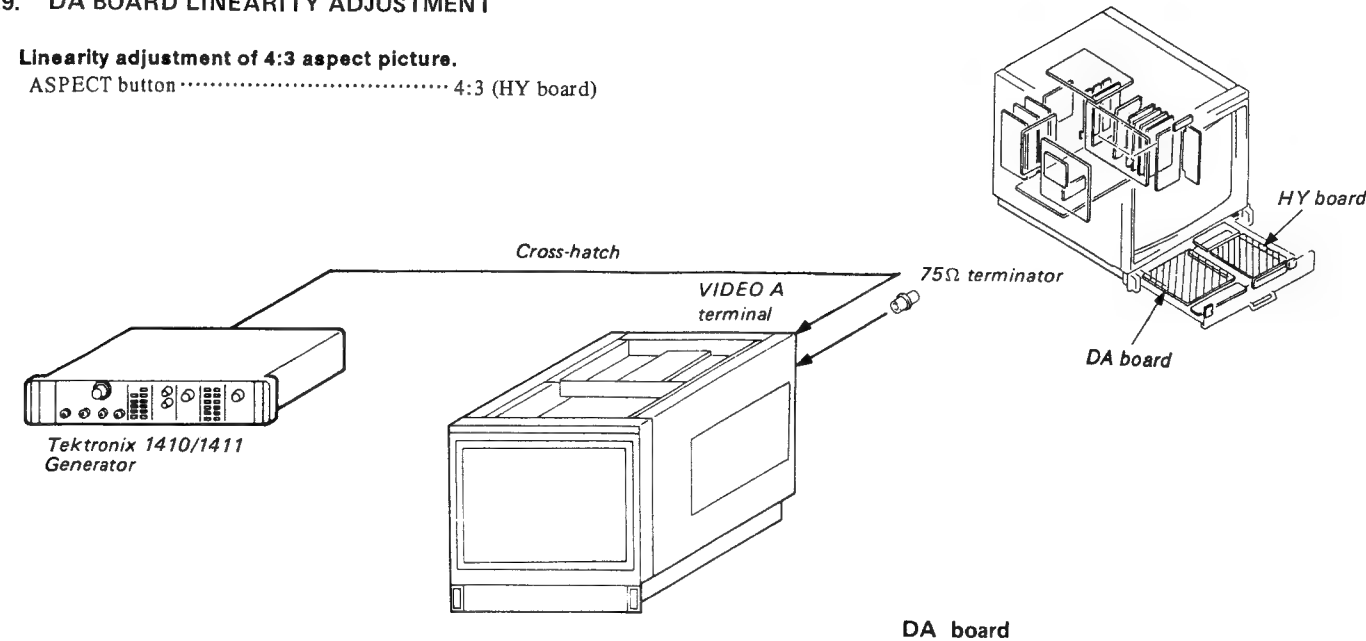


Fig. 28-1



29. DA BOARD LINEARITY ADJUSTMENT

- Linearity adjustment of 4:3 aspect picture.  
ASPECT button ..... 4:3 (HY board)



TOP AND BOTTOM PIN ADJUSTMENT

- Receive cross-hatch signal and with H-LINE only.
- Adjust T&B pin distortion H PHASE by turning DA board RV27 (TRAPEZOID) as shown in Fig. 29-1.
- Adjust T&B pin distortion gain by turning DA board RV13 as shown in Fig. 29-1.
- Adjust T&B pin distortion vertical balance by turning DA board RV10 as shown in Fig. 29-1.
- Adjust PARALLELO GRAM distortion by turning DA board RV28 (PARALLEL) as shown in Fig. 29-1.
- Mark tracking by repeating 2 through 5.
- UNDER SCAN switch (front panel) ..... UNDER ( )
- Adjust T&B distortion gain by turning DA board RV14.

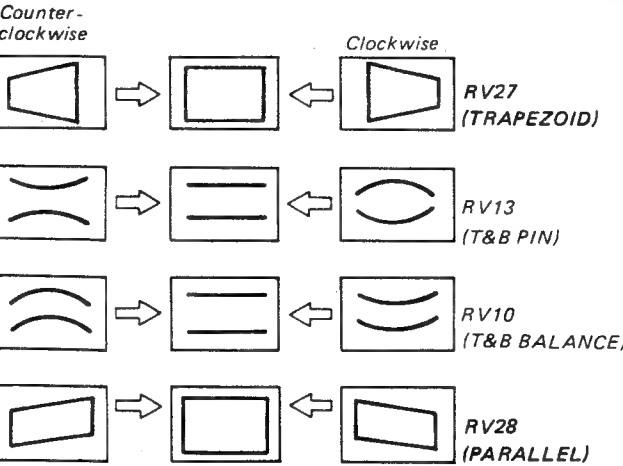
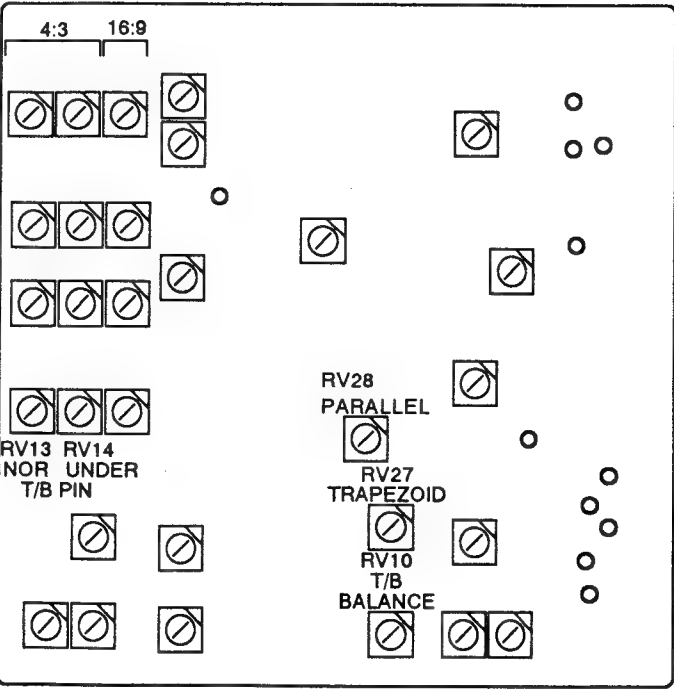
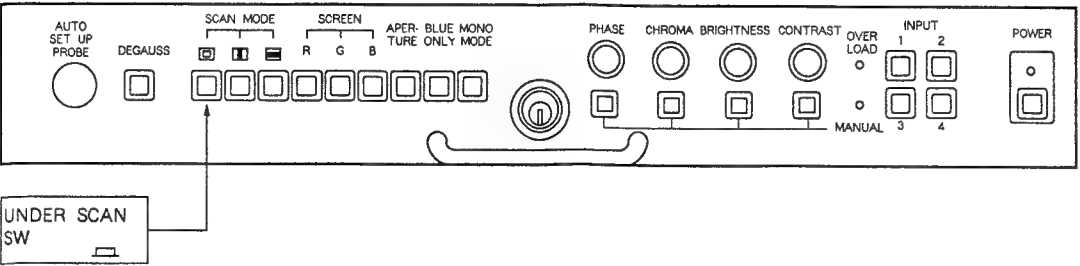


Fig. 22-1



FRONT PANEL



V. LINEARITY ADJUSTMENT

- Receive cross-hatch signal and with H-LINE only.
- Adjust V. CENTER by turning DA board RV21.
- Adjust V. LIN BALANCE by turning DA board RV20 as shown in Fig. 29-2.
- Adjust V. LIN GAIN by turning DA board RV22 as shown in Fig. 29-3.
- Adjust V. HEIGHT by turning DA board RV23.
- UNDER SCAN switch (Front panel) ..... UNDE ( )
- Adjust V. HEIGHT by turning DA board RV24.
- Mark tracking by repeating steps 2. through 5.

RV20 ..... V LIN BALANCE

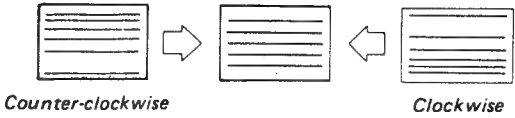


Fig. 29-2

RV22 ..... V LIN GAIN

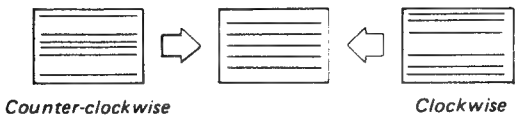


Fig. 29-3

SIDE PIN ADJUSTMENT

- Receive cross-hatch signal and with V. LINE only.
- Adjust SIDE PIN by turning DA board RV15 as shown in Fig. 29-4.
- Adjust SIDE PIN TILT by turning DA board RV19 as shown in Fig. 29-5.
- Adjust H. CENTER LINE by turning DA board RV25 as shown in Fig. 29-6.

RV15 (SIDE PIN)

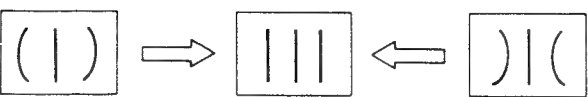


Fig. 29-4

RV19 (SIDE PIN TILT)

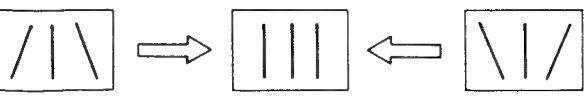


Fig. 29-5

RV25 (H. CENTER LINE)

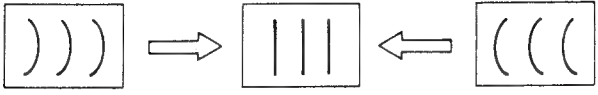


Fig. 29-6

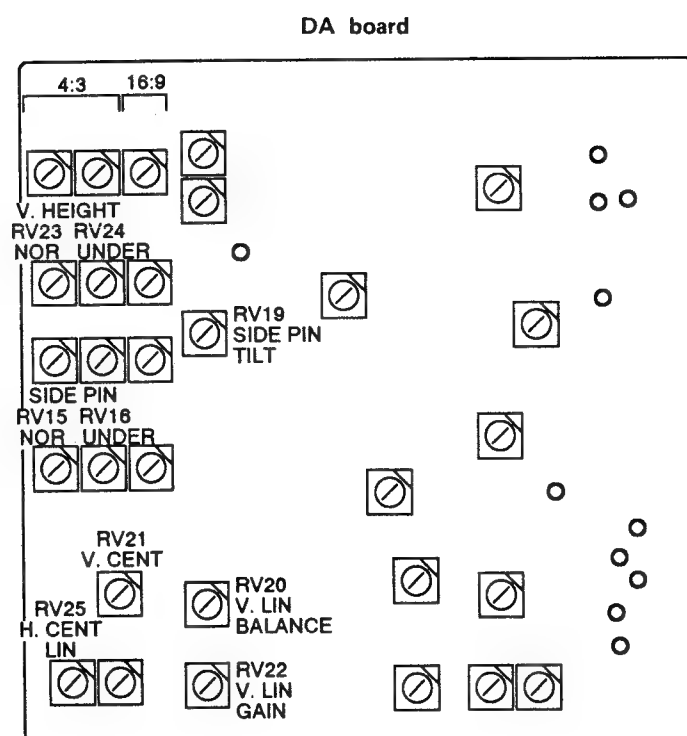
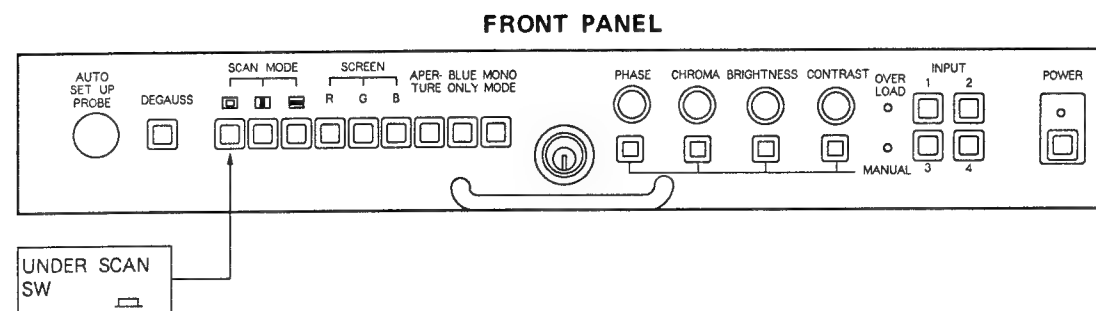
- UNDER SCAN switch (Front panel (L)) ..... UNDER ( )
- Adjust SIDE PIN by turning DA board RV16.

H. LINEARITY ADJUSTMENT

- Receive cross-hatch signal and with V-LINE only.
- Adjust H. LINEARITY by turning DA board RV6 (H LIN GAIN) as shown in Fig. 29-7.



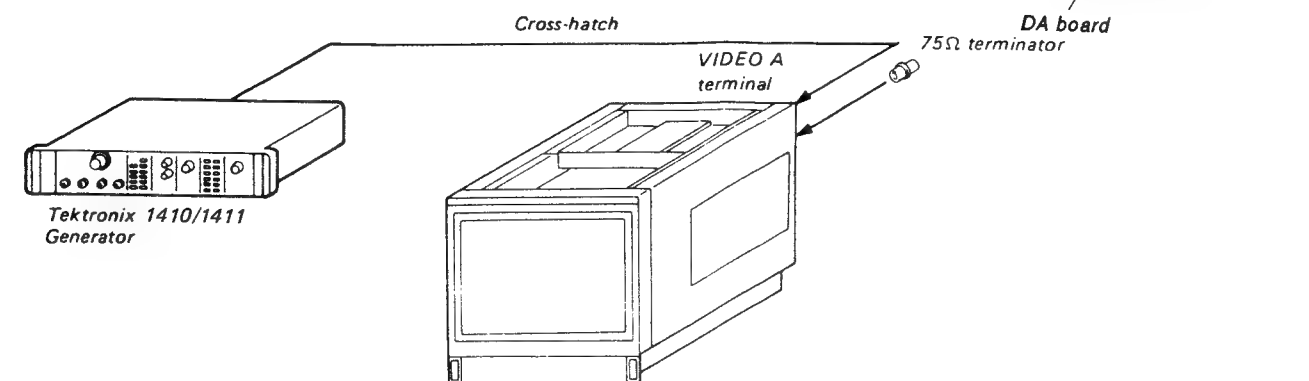
Fig. 29-7



- **Linearity adjustment of 16:9 aspect picture.**  
ASPECT button ..... 16:9 (HY board)

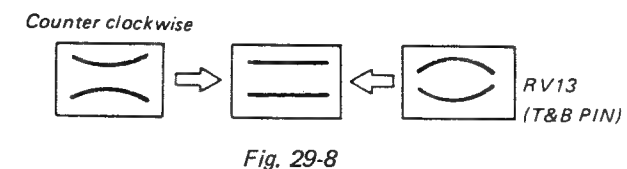
**NOTE:**

- Adjust the convergence of the 16:9 aspect picture after convergence adjustment of the 4:3 aspect picture is completed.



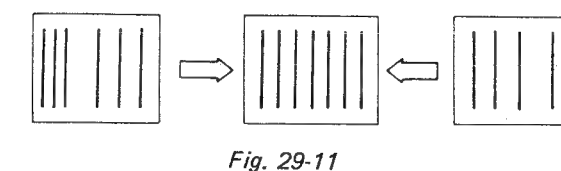
**TOP AND BOTTOM PIN ADJUSTMENT**

1. Receive cross-hatch signal and with H-LINE only.
2. Adjust T&B pin distortion gain by turning DA board RV30 as shown in Fig. 29-8.



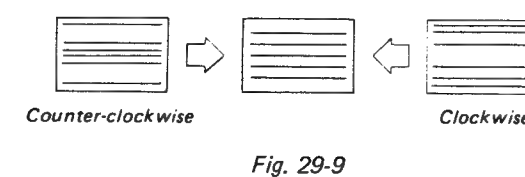
**H. LINEARITY ADJUSTMENT**

1. Receive cross-hatch signal and with V-LINE only.
2. Adjust H. WIDTH by turning DA board RV29 as shown in Fig. 29-11.



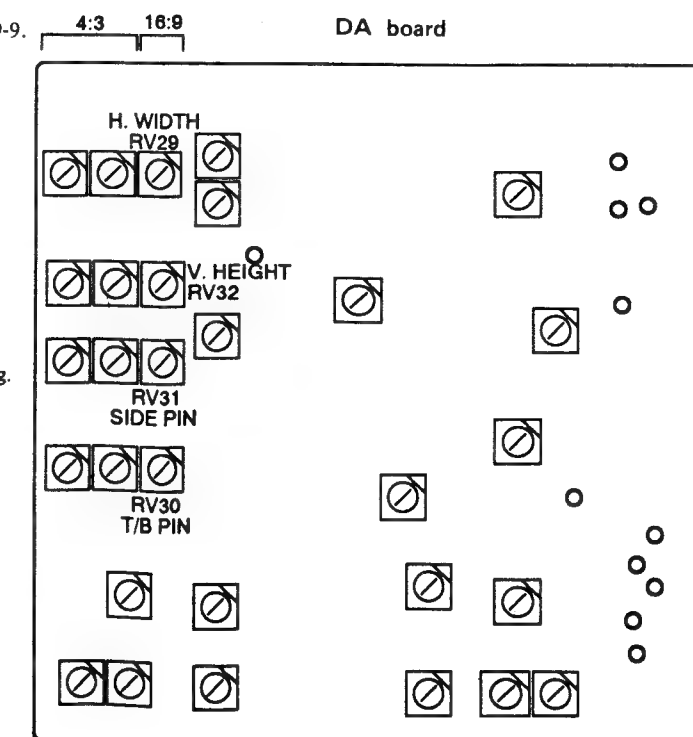
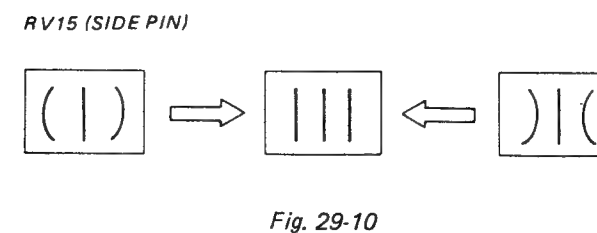
**V. LINEARITY ADJUSTMENT**

1. Receive cross-hatch signal and with H-LINE only.
2. Adjust V. HEIGHT by turning DA board RV32 as shown in Fig. 29-9.



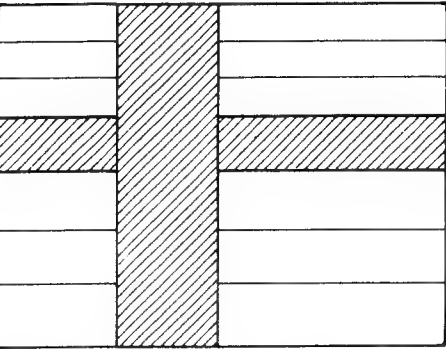
**SIDE PIN ADJUSTMENT**

1. Receive cross-hatch signal and with V. LINE only.
2. Adjust SIDE PIN by turning DA board RV31 as shown in Fig. 29-10.



30. H. FREQ ADJUSTMENT

- 1. Receive cross-hatch signal, and SYNC selector to EXT (EXT).
- 2. Adjust until the picture stops drifting or moves slowly by turning DA board RV5 as shown in Fig. 30-1.



\* Adjust so that the picture either stops drifting or moves slowly.

Fig. 30-1

31. DA BOARD H. CENTER, BLK, H.PHASE ADJUSTMENT

- 1. Receive monoscope signal, and UNDER SCAN switch to UNDER (UNDER).
- 2. Picture tube
  - V. DELAY switch IN (IN)
- 3. Adjust RV1 and RV7 on the DA board so that the raster can all be seen by RV1 and RV7 as shown in Fig. 31-1.

H. CENTER

- 4. Adjust RV26 on the DA board so that the out side portions of the raster become equal to at the right and the left sides as shown in Fig. 31-1.

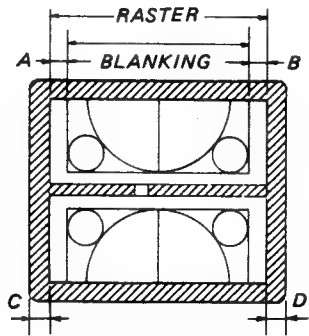


Fig. 31-1

H. BLK Adjustment

- 5. Connect an oscilloscope to the TP1 on the DA board.
- 6. Adjust RV1 on the DA board so that the H. BLK pulse width is 9.8μs. Fig. 31-2.

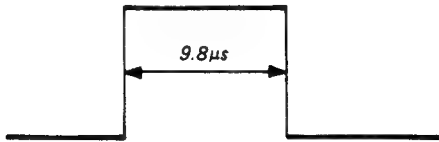


Fig. 31-2

H. BLK PHASE Adjustment

- 7. Adjust RV7 on the DA board so that the blanking width at the right and the left sides are equal to as shown in Fig. 31-3.

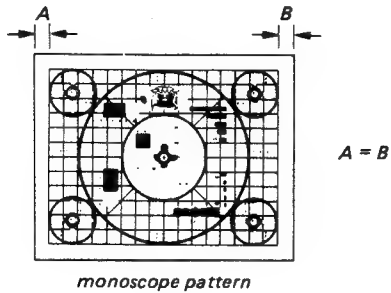


Fig. 31-3

H. PHASE Adjustment

- 8. Adjust RV4 on the DA board so that the outside raster portions of the picture become equal at the right and the left sides as shown in Fig. 31-4.

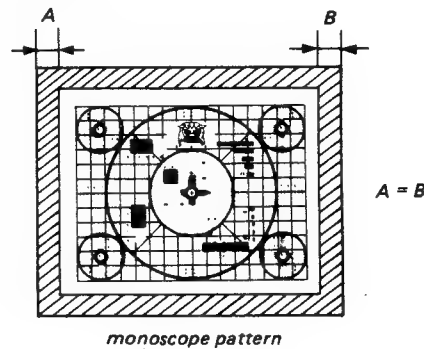
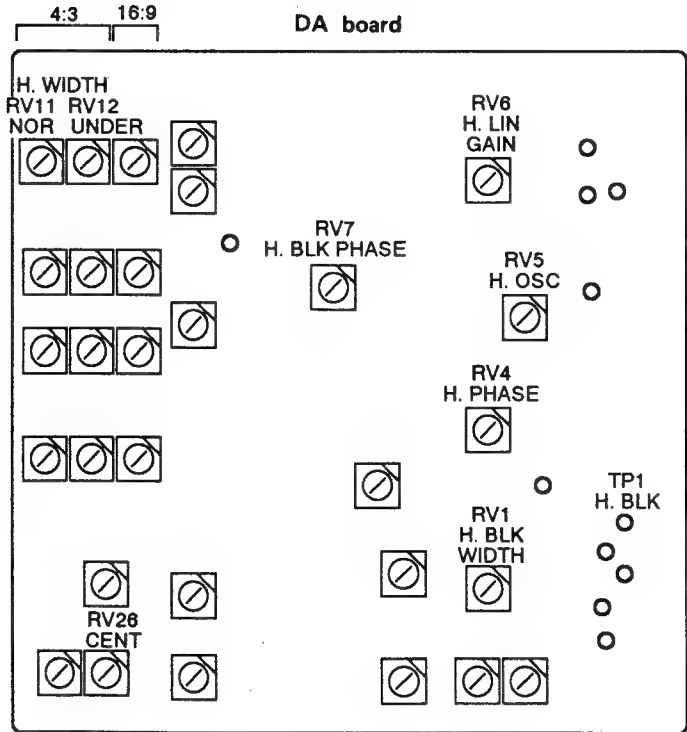
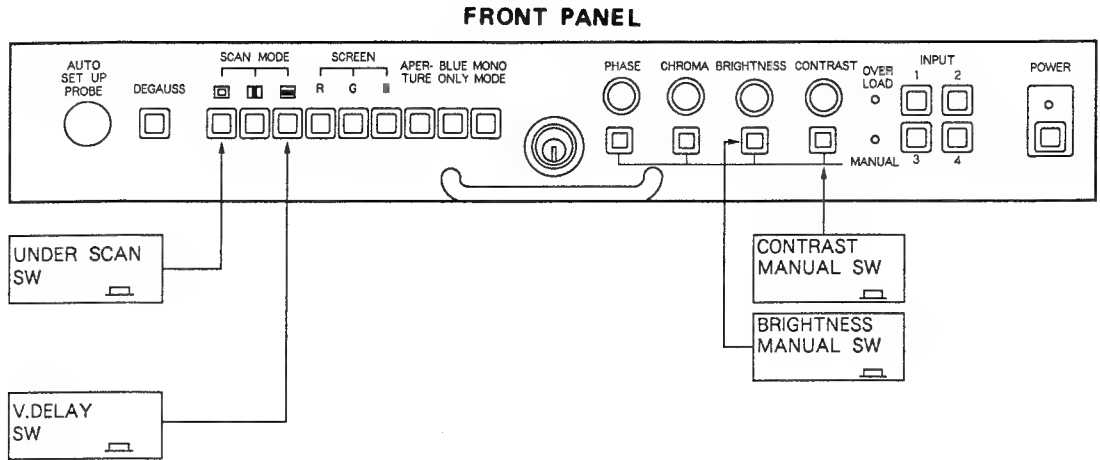
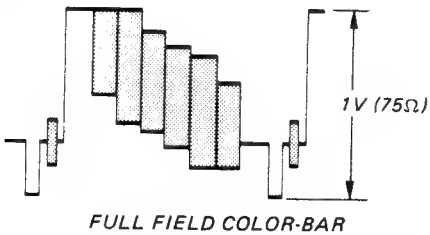
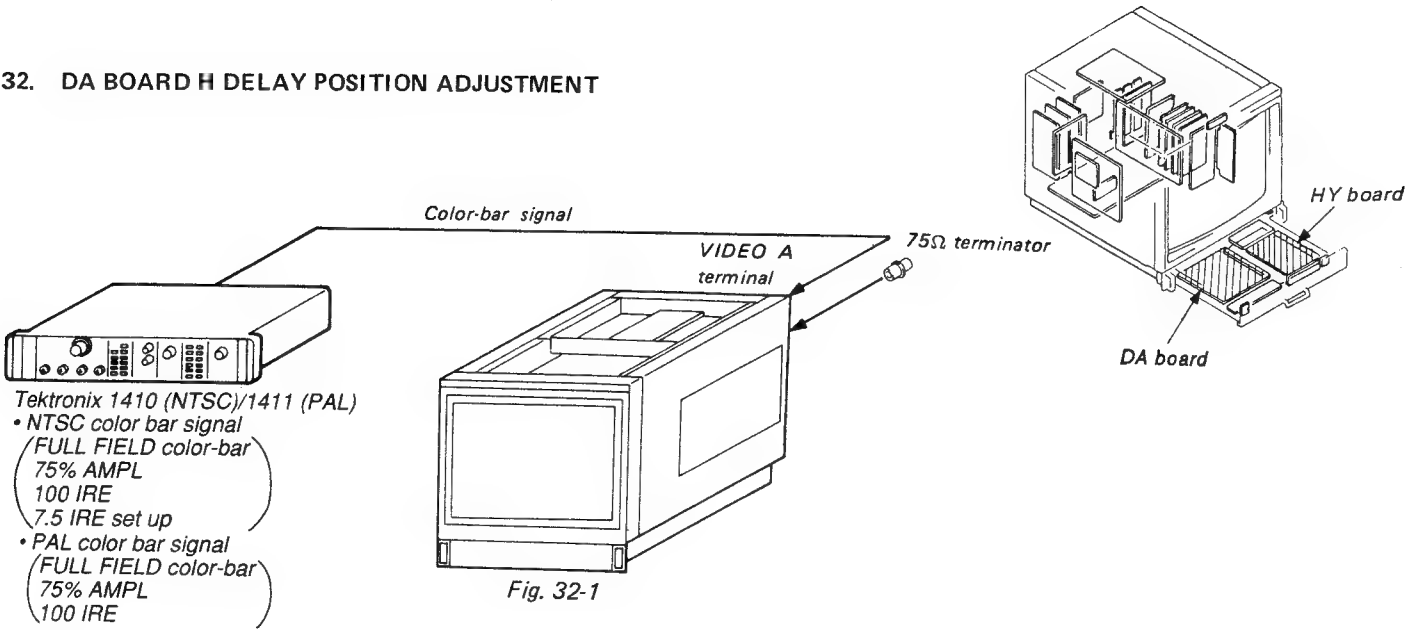


Fig. 31-4





32. DA BOARD H DELAY POSITION ADJUSTMENT



H. DELAY PULSE WIDTH ADJUSTMENT

1. Connect an oscilloscope to the TP2 on the DA board.
2. Adjust RV3 on the DA board so that PULSE width is equal when switching H-DELAY switch IN and OUT.

H. DELAY POSITION

1. Connect as shown in Fig. 32-1.
2. Turn the INPUT selector to "1" (SYNC button "INT" and, H DELAY & V DELAY SW to "IN" (pulse close position).
3. Adjust the H-DELAY position as shown in Fig. 32-2 by turning DA Board RV2.

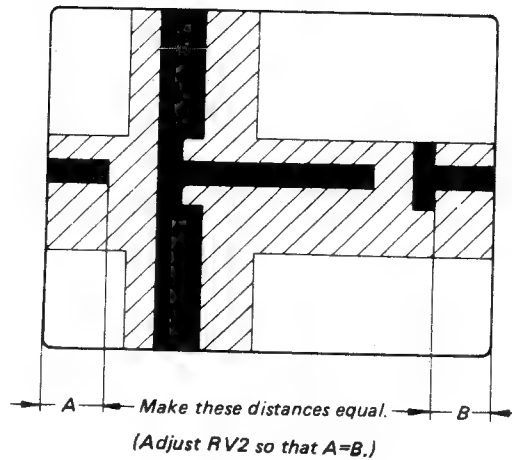
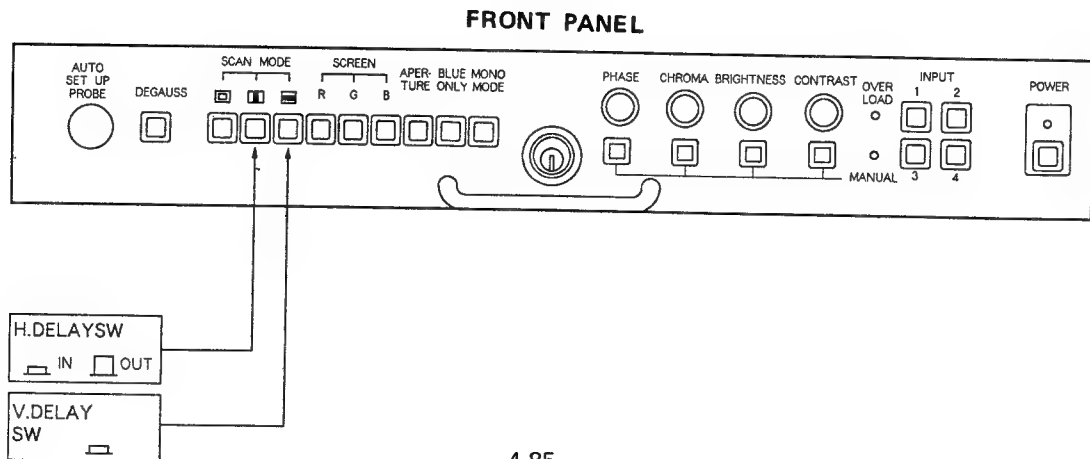
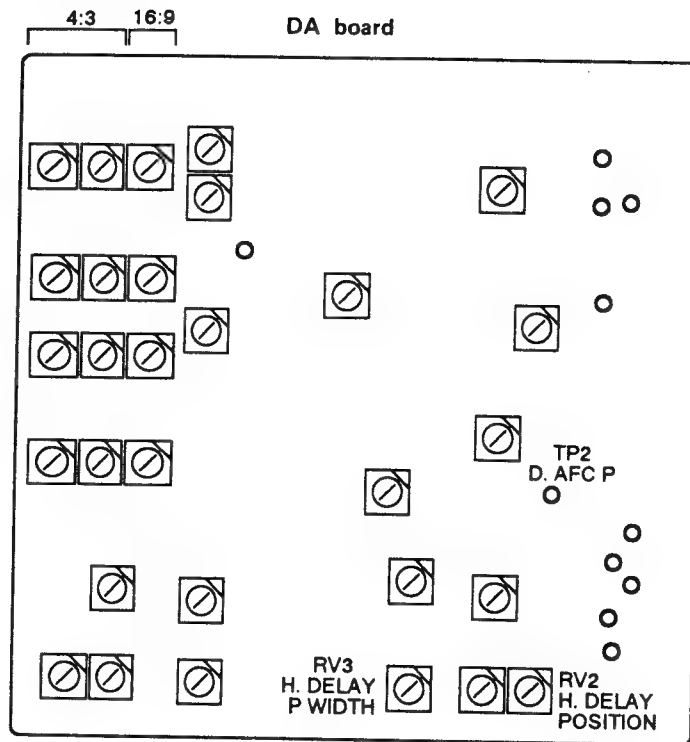


Fig. 32-2

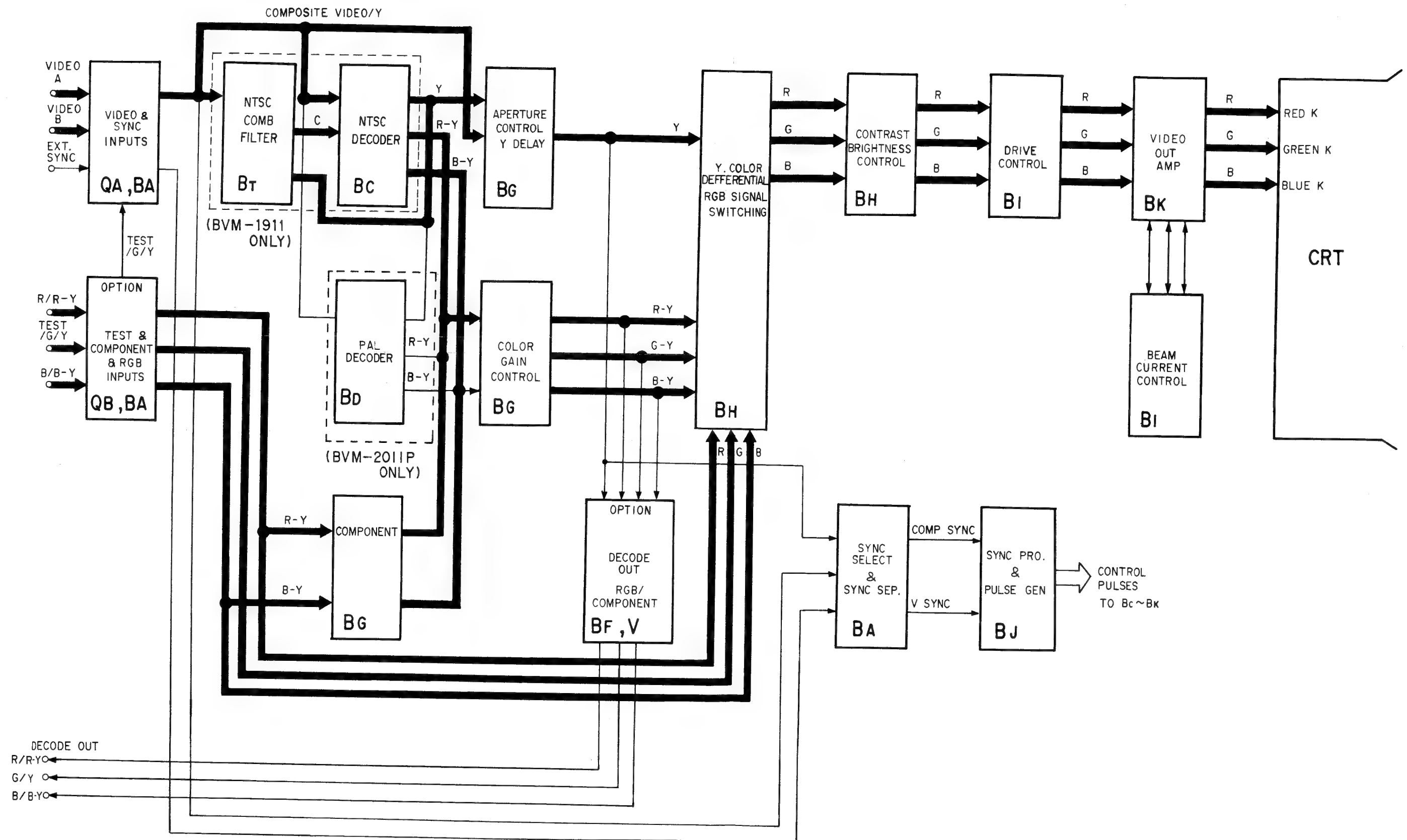




# BLOCK DIAGRAM BLOCK DIAGRAM

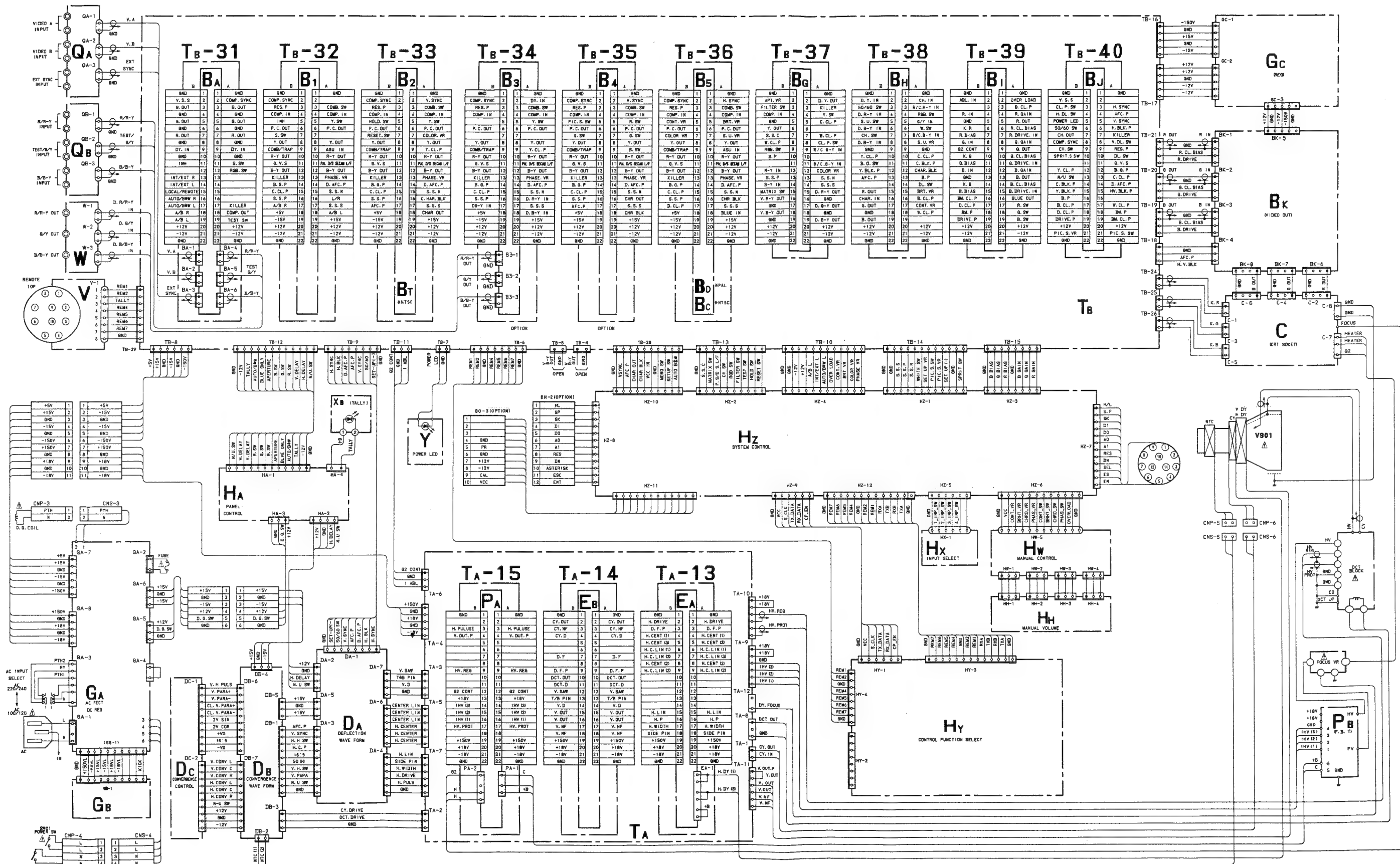
## SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM  
SIGNAL PROCESSING BLOCK DIAGRAM




# FRAME FRAME


5-2. FRAME WIRING DIAGRAM










5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:



Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.




Note: Les composants identifiés par une trame et par une marque  sont d’une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. p :  $\mu\text{F}$   
50 WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/2W on the C board,  
1/10W on the BT, DC, HY, and HZ boards and 1/4W  
on the rest of the boards unless otherwise specified.  
 $k\Omega = 1000\Omega$ ,  $M\Omega = 1000k\Omega$
-  : nonflammable resistor.
- $\Delta$  : internal component.
-  direct connection to points marked  on the chassis
-  : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.  
When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved.  
Refer to R52, R53, R67, R68, R124, R126, R222, R227, R228 and R239.  
Adjust on page 4-13 ~ 4-18.  
When replacing the part in below table, be sure to perform the related adjustment.

Reference information




- RESISTOR : RN METAL FILM  
: RC SOLID  
: FPRD NONFLAMMABLE CARBON  
: FUSE NONFLAMMABLE FUSIBLE  
: RS NONFLAMMABLE WIREWOUND  
: RB NONFLAMMABLE CEMENT
- COIL : LF-8L MICRO INDUCTOR
- CAPACITOR: TA TANTALUM  
: PS STYROL  
: PP POLYPROPYLENE  
: PT MYLAR  
: MPS METALIZED POLYESTER  
: MPP METALIZED POLYPROPYLENE  
: ALB BIPOLAR  
: ALT HIGH TEMPERATURE  
: AIR HIGH RIPPLE

Part replaced (  )	Adjustment (  )
C59, IC3, R67, R68, R78, RV2 . . . (GA board)	B+ MAX (R67, R68) Page 4-13.
Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 . . . (GB board)	B+ PROTECTOR (R52, R53) Page 4-13.
D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1 . . . (PA board) DCT BLOCK	HV REG (R124, R126) Page 4-18.
D205, D207, D214, D215 IC2, R201, R202, R213, R214, R225, R226, R227, R228, R229, R230, R243, R245 . . . (PA board) DCT BLOCK	HV HOLD DOWN (R227, R228) Page 4-16.
D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, R223, R224, R242 . . . (PA board) T1 (FBT), R1, R2, R5 . . . (PB board)	BEAM CURRENT PROTECTOR-1 (R222) Page 4-13 ~ 4-16
D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247 . . . (PA board) T1 (FBT), R3, R4, R5, R6 . (PB board)	BEAM CURRENT PROTECTOR-2 (R239) Page 4-14 ~ 4-15

-  adjustment for repair.
-  B+ bus.
-  B- bus.
- Circled numbers are waveform references.
- Waveforms are taken with a color-bar signal input and with a 75 $\Omega$  terminator connected to an open terminal.

- Switches and controls are set as follows unless otherwise noted.



FRONT PANEL

- INPUT selector . . . . . 1 HX board
- CONTRAST MANUAL switch . . . . . PRESET
- BRIGHTNESS MANUAL switch . . . . . PRESET
- CHROMA MANUAL switch . . . . . PRESET HW board
- PHASE MANUAL switch . . . . . PRASET
- SCAN MODE switch
-  UNDER SCAN . . . . . NOR
-  H. DELAY . . . . . NOR
-  V. DELAY . . . . . NOR
- SCREEN switch (R) . . . . . NOR HA board
- SCREEN switch (G) . . . . . NOR
- SCREEN switch (B) . . . . . NOR
- APT switch . . . . . NOR
- BLUE ONLY switch . . . . . NOR
- MODE selector . . . . . AUTO

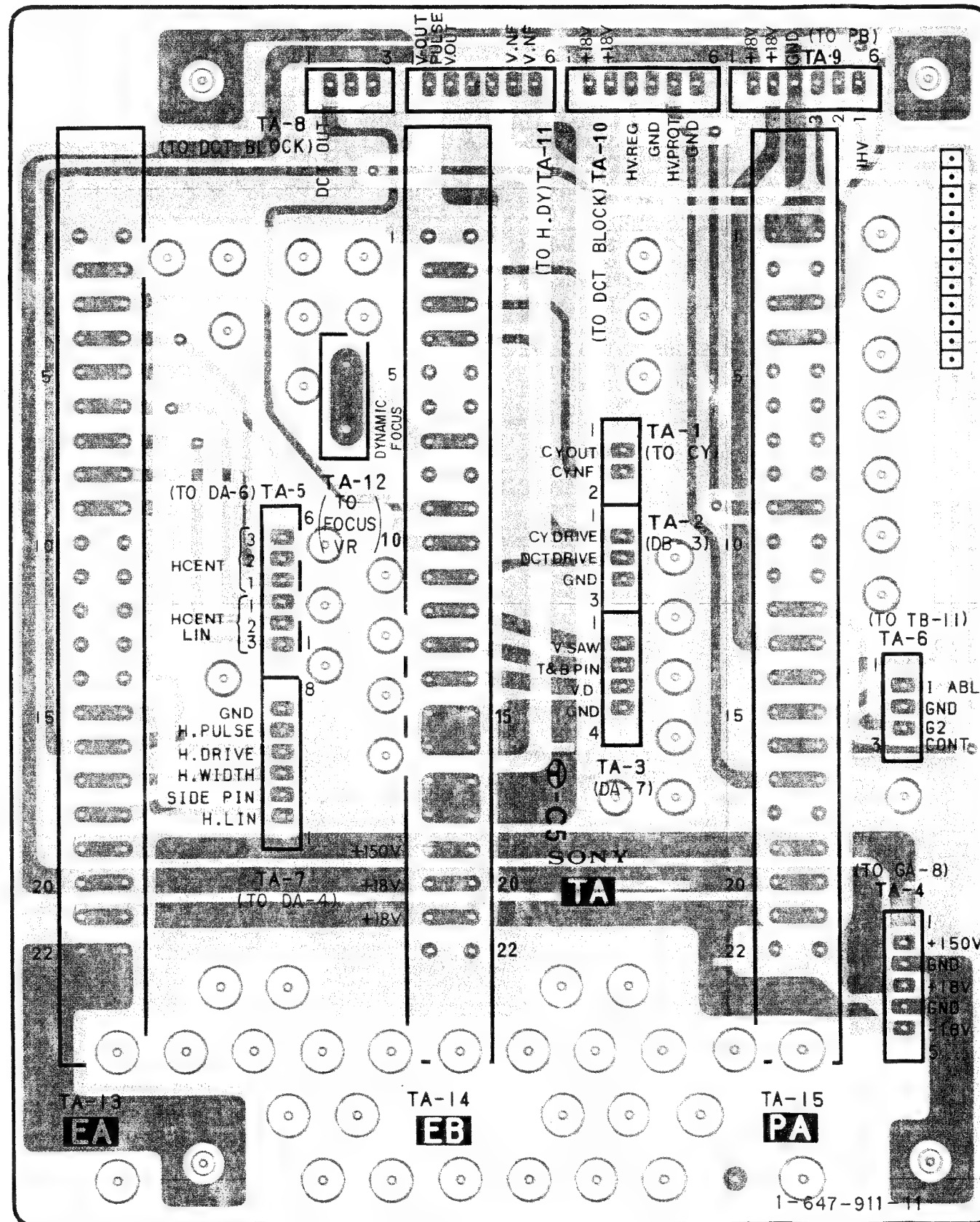
SUB CONTROL PANEL

- FORMAT button . . . . . CODED
- INPUT button . . . . . A
- SYNC button . . . . . INT
- COLOR SYSTEM button . . . . . NTSC (BVM-1311/1911)  
PAL (BVM-1411P/2011P)
- YC SEP button . . . . . COMB (BVM-1311/1911)  
TRAP (BVM-1411P/2011P)
- WHITE BALANCE button . . . . . D65/D93
- ASPECT button . . . . . 4 : 3
- PIC SETUP button . . . . . OFF HY board
- SAD/VITC/MARKER button . . . . . OFF
- FILTER button . . . . . OFF
- MATRIX button . . . . . OFF
- PAL S/SECAM F/COMB S button . . . . . OFF
- CROSS HATCH button . . . . . OFF
- SPLIT SCREEN button . . . . . OFF
- WHITE button . . . . . OFF
- GRAY button . . . . . OFF
- AFC switch . . . . . 2m sec DA board

Note:

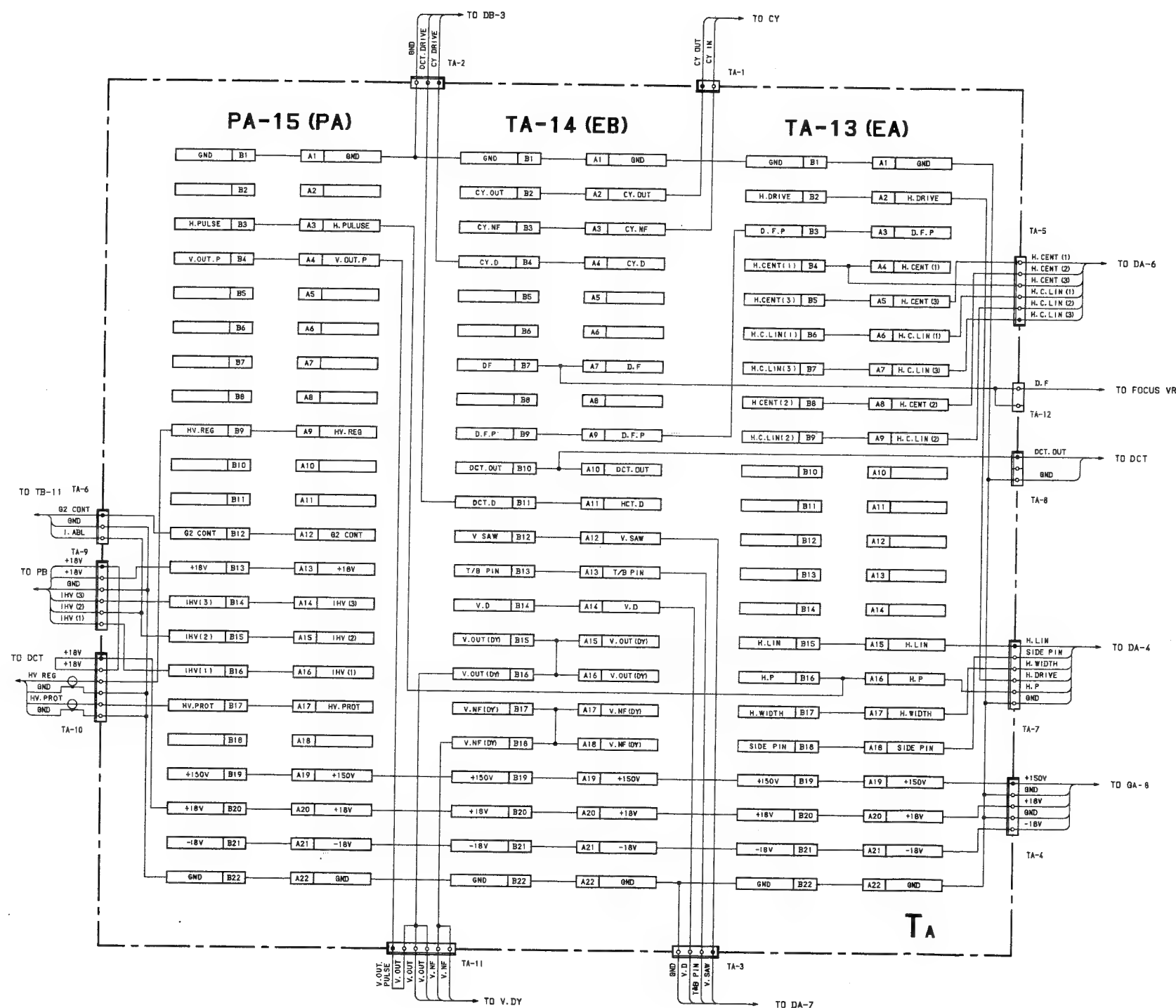
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

TA board (MOTHER BOARD)

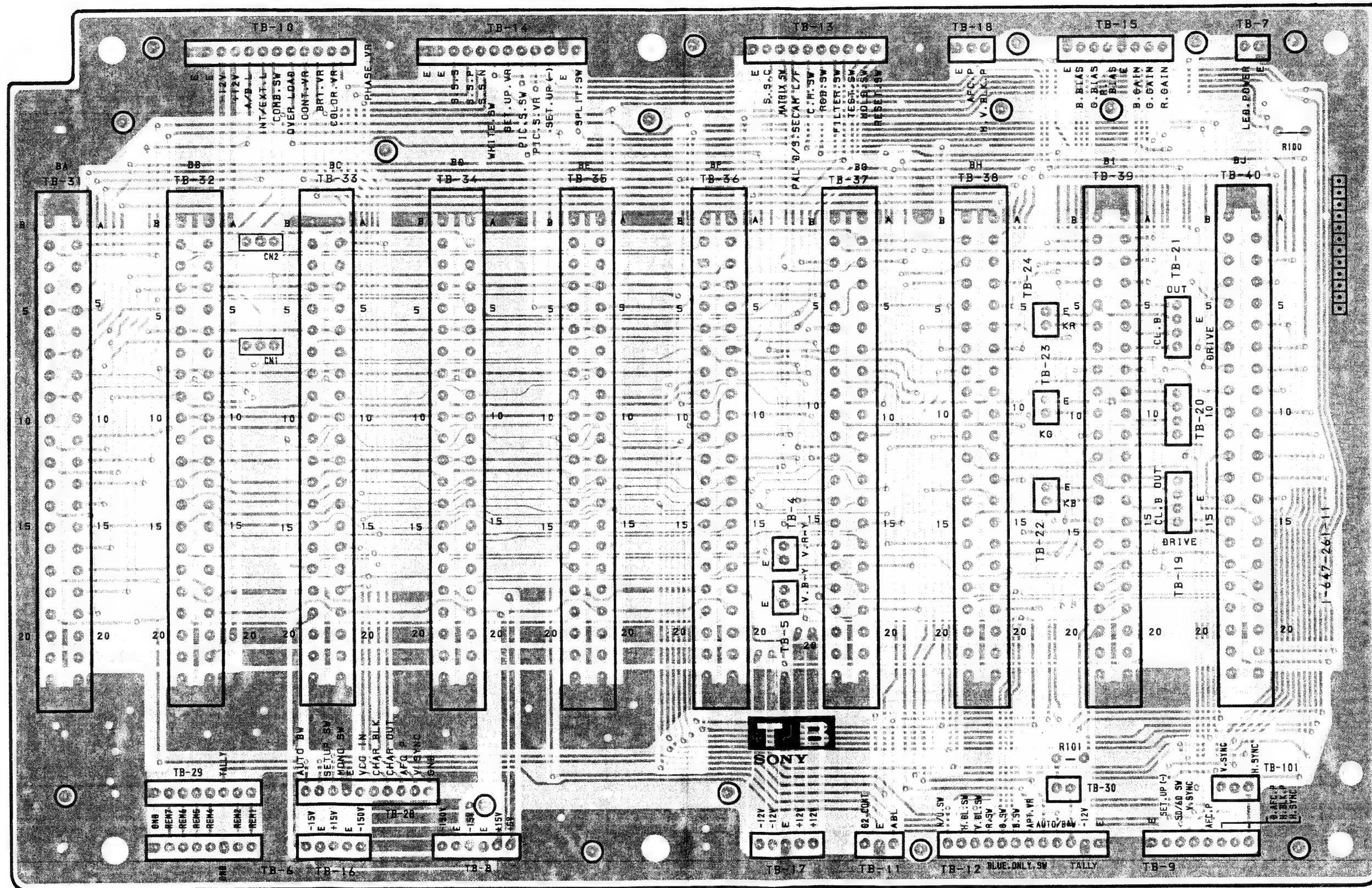


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

TA board (MOTHER BOARD)

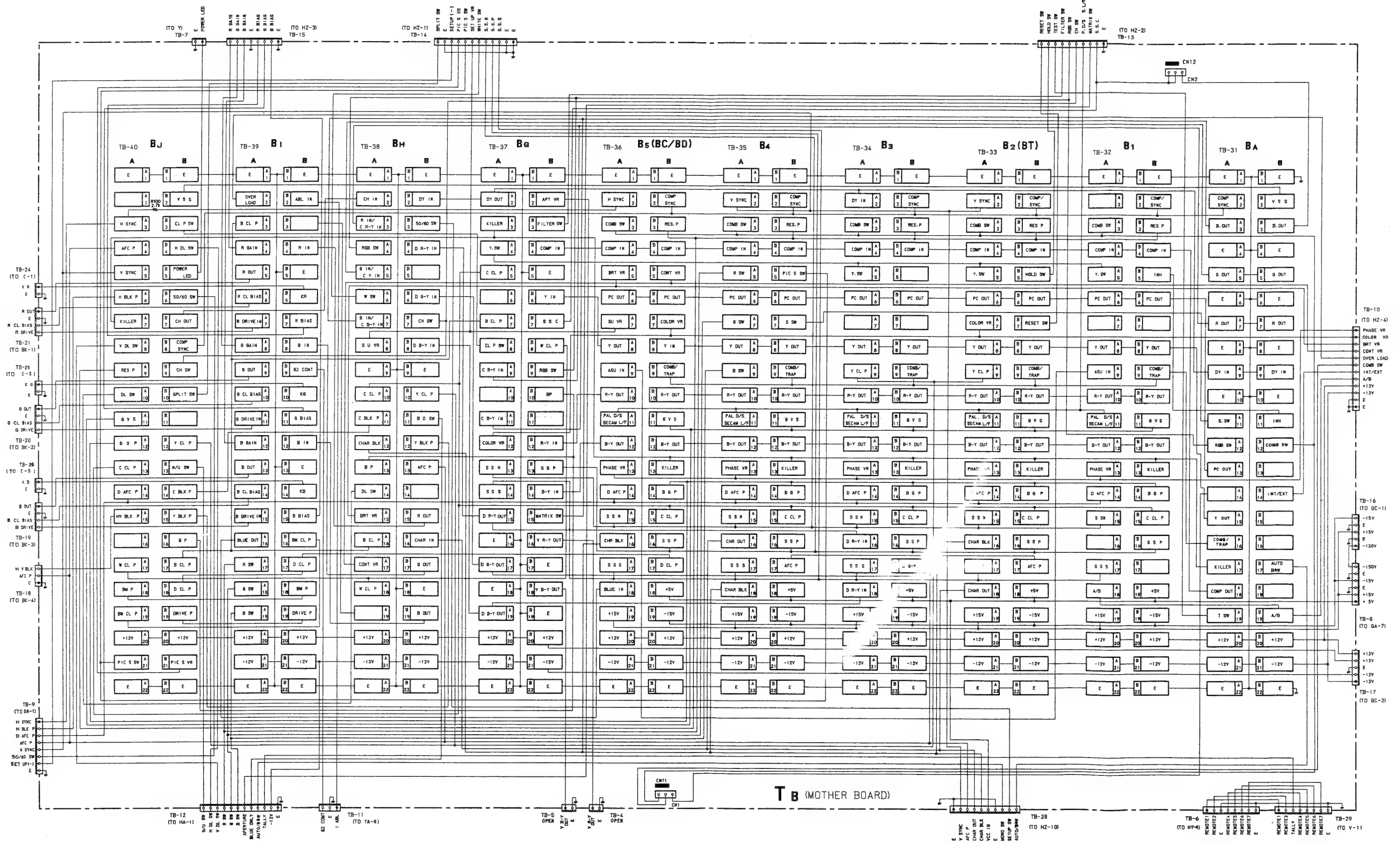






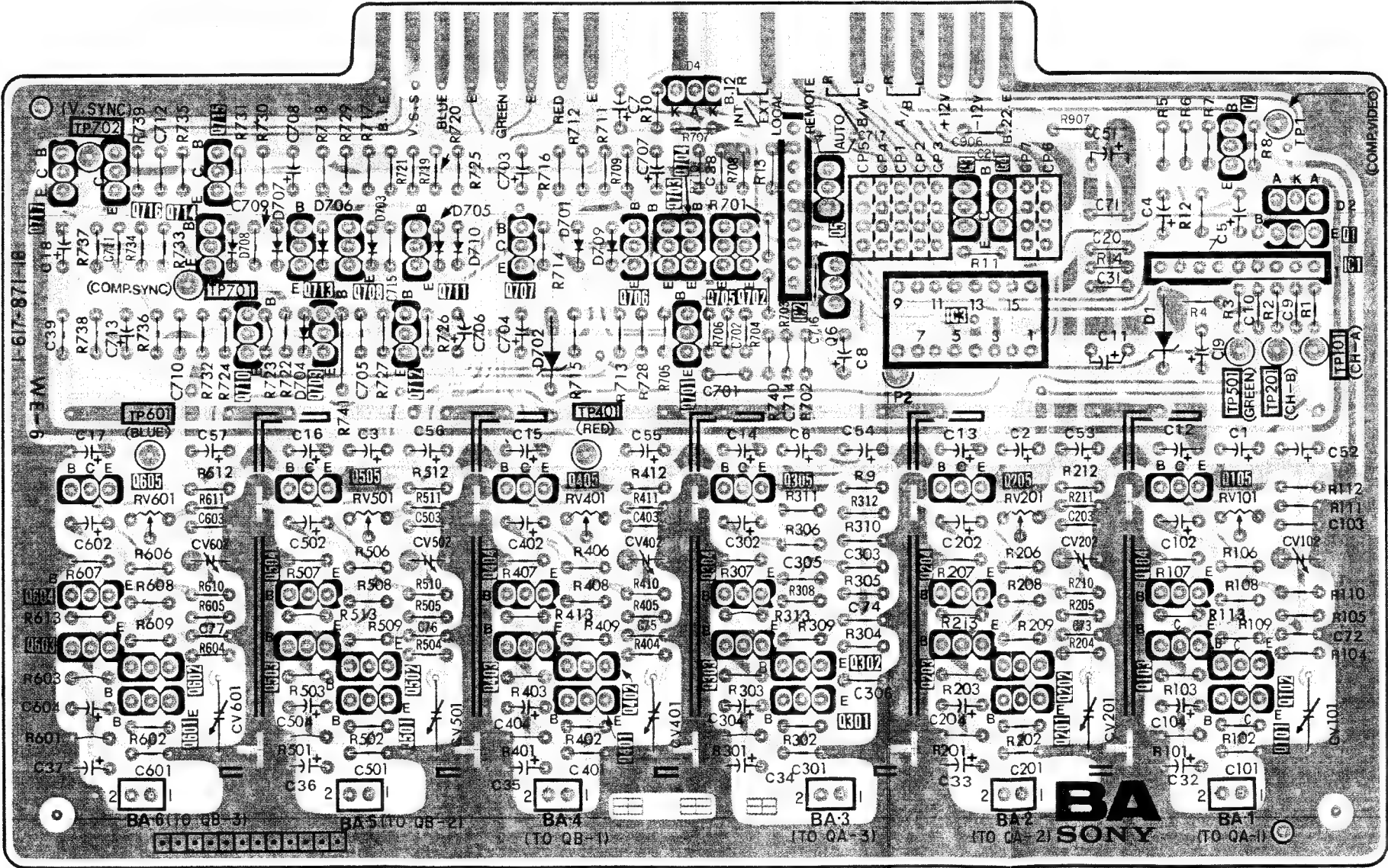


TB board (MOTHER BOARD)

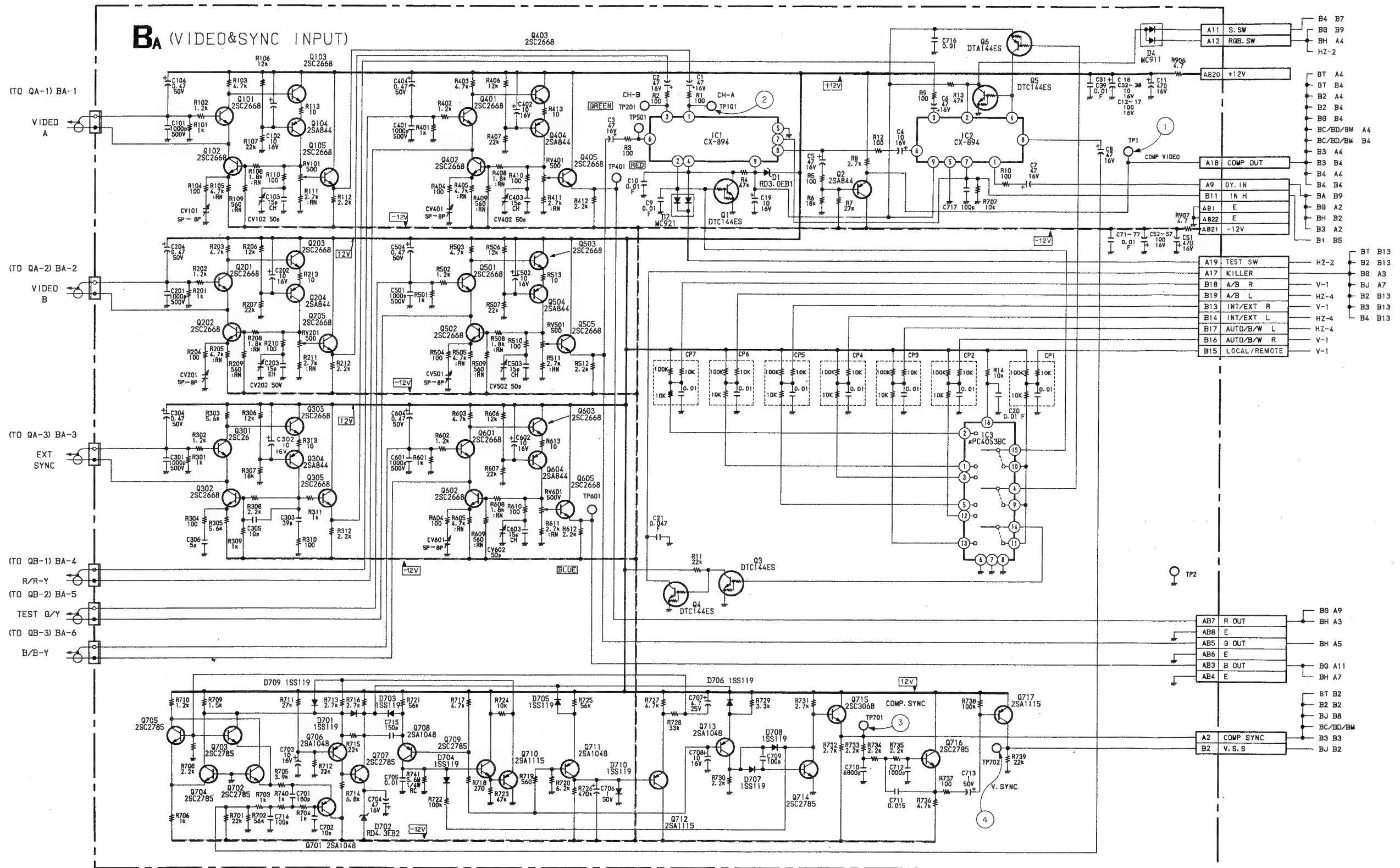


BA board (SYNC SELECT & SYNC SEP, HOOK UP)

IC	2										3				1						
Q	717	716	715 714	713	708	711	707	706	704 701	703	705	702	5	6	3	4	2	1			
	605 604 603	602 601	710	505 504 503	502 501		405 404 403	402 401			305 304 303				205 204 203		105 104 103	102 101			
D	708 707 706 704 703 705 710										101 709 702	4					1	2			
TP ADJ	TP702	TP601 RV601	CV602 CV601	TP701	RV501	CV502 CV501	TR401 RV401		CV402 CV401	TP2		RV201	CV202 CV201				TP501 RV101	TP1 TP201 TP101 CV102 CV101			



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

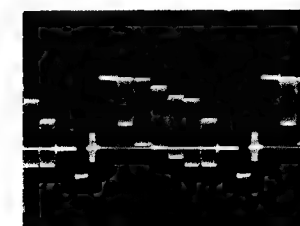


BA BOARD

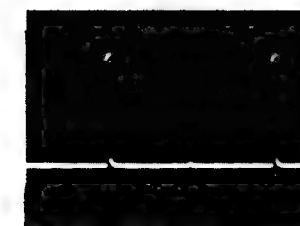
IC1	CX894	INPUT SELECT
2	CX894	SYNC SELECT
3	MC14053BCP	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

Q603	2SC2668	B-Y/B AMP
604	2SA844	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3.0E-B1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4.3E-B2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC

5. DIAGRAMS



① 1Vp-p (H)  
② 1Vp-p (H)



④ 12 Vp-p (V)

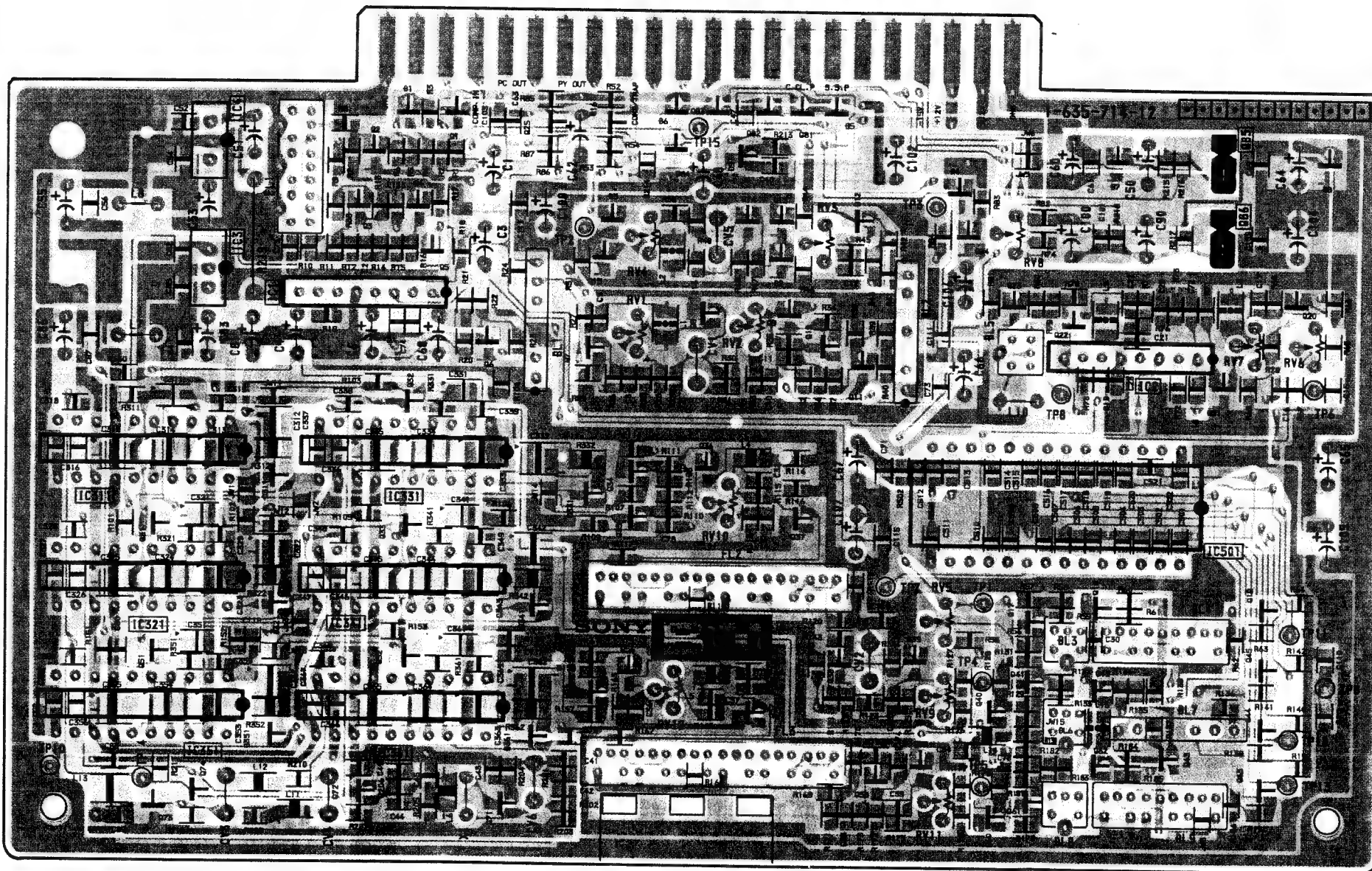


③ 12Vp-p (H)



BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)  
(BVM-1911 ONLY)

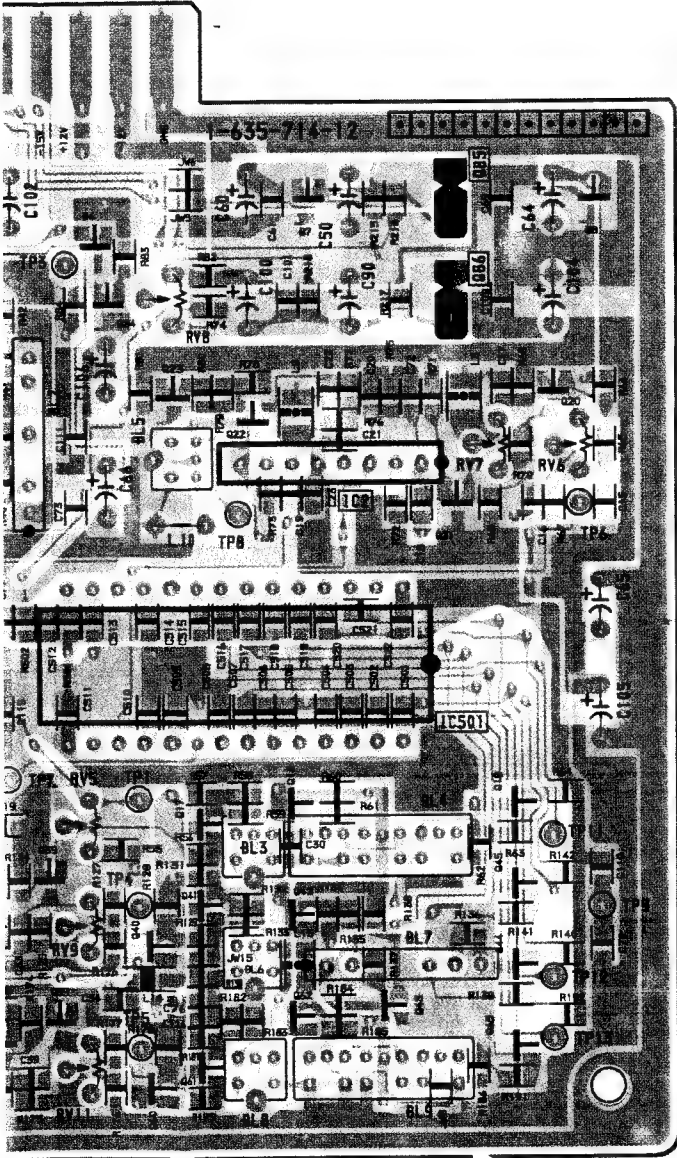
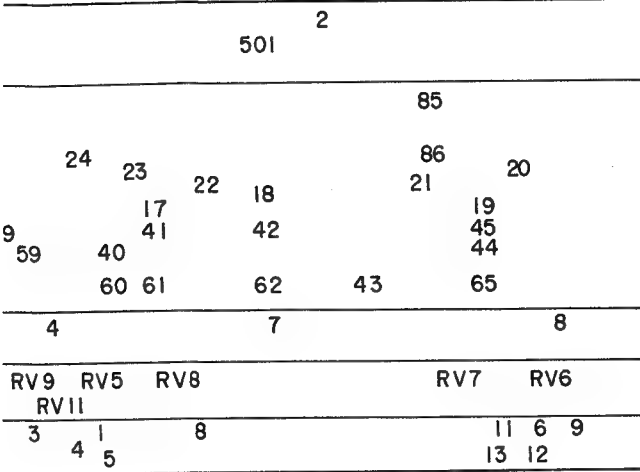
IC	311	4	1	331	501	2
	321	3		341		
	351			361		
Q			2	1	25	16
			3	4	84	83
			5	6	14	13
			32	7	15	34
			33	8	35	36
			52	9	10	37
	31			11	38	39
	51			12	40	41
	73	74		17	42	18
			72	19	43	20
			71	21	44	22
				23	45	24
				25	46	26
D			311	321	1	341
			351		3	361
ADJ		CV3	CV4	CV6	RV4	CV5
				RV1	RV2	RV3
TP	10	14		2	15	3
				7	4	5
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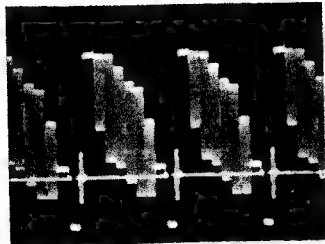
BT BOARD

IC1	LA7816	Y SELECT
2	LA7816	C SELECT
3	NJM7808FA	9V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
361	CXL1009P	CCD
501	CXA1539P	CORRELATION
01	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUFFER
12	2SA1226	Y AMP & BUFFER
13	2SC2757	Y AMP & BUFFER
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SW
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
20	2SC2757	S COMB C LEVEL, PHASE
21	2SC1623	S COMB C LEVEL, PHASE
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SW
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns C
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns C
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns C
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns C
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns C
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
56	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
57	2SC1623	AMP
58	2SA1226	AMP
59	2SC2757	AMP

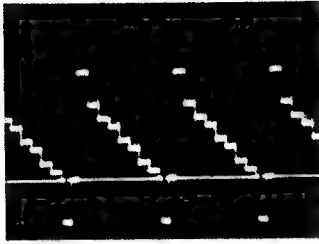
- Pattern from the side which enables seeing.
- Pattern of the rear side.



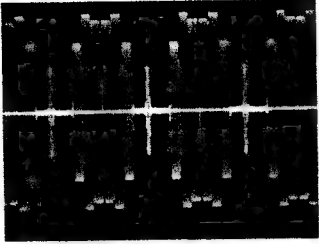
BT BOARD					
IC 1	LA7816	Y SELECT	Q 60	2SC1623	AMP
2	LA7816	C SELECT	61	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
3	NJM7809FA	9V REG	62	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
4	NJM7805FA	5V REG	65	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
331	CXL1009P	CCD	71	2SC2757	X'TAL OSC
341	CXL1009P	CCD	72	2SA1226	X'TAL OSC
361	CXL1009P	CCD	73	2SC2757	X'TAL OSC
501	CXA1539P	CORRELATION	74	2SA1226	X'TAL OSC
0 1	2SA812	BUFFER	81	DTA144EK	SW CONTROL
2	2SC1623	BUFFER	82	DTC144EK	SW CONTROL
3	2SA1226	AMP	83	DTA144EK	SW CONTROL
4	2SC2757	AMP	84	DTA144EK	SW CONTROL
5	2SC1623	AMP	85	2SB734	SW CONTROL
6	2SC1623	Y DELAY	86	2SD774	SW CONTROL
7	2SA1226	Y DELAY	D 1	1S2835	SW
8	2SA812	Y DELAY	2	RD5.6WB2	DC SHIFT
9	2SA1226	Y/C MIX	3	1S2837	SW
10	2SC2757	Y/C MIX	4	1S2837	SW
11	2SC1623	Y AMP & BUFFER	5	1S2837	SW CONTROL
12	2SA1226	Y AMP & BUFFER	6	1S2835	SW CONTROL
13	2SC2757	Y AMP & BUFFER	7	1S2837	SW CONTROL
14	2SC2757	Y DELAY	8	1S2835	SW CONTROL
15	2SA812	Y DELAY	9	1S2835	SW CONTROL
16	2SC3624A	BUFFER & SW	331	1S2837	CLAMP
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)	341	1S2837	CLAMP
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)	361	1S2837	CLAMP
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)			
20	2SC2757	S COMB C LEVEL, PHASE			
21	2SC1623	S COMB C LEVEL, PHASE			
22	2SC1623	BPF, BUFFER			
23	2SC1623	BPF, BUFFER			
24	2SA812	BPF, BUFFER			
25	2SC3624A	BUFFER & SW			
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
37	2SC1623	AMP			
38	2SA1226	AMP			
39	2SC2757	AMP			
40	2SC1623	AMP			
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
56	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
57	2SC1623	AMP			
58	2SA1226	AMP			
59	2SC2757	AMP			



① 1.1 Vp-p(H)



② 0.95 Vp-p(H)



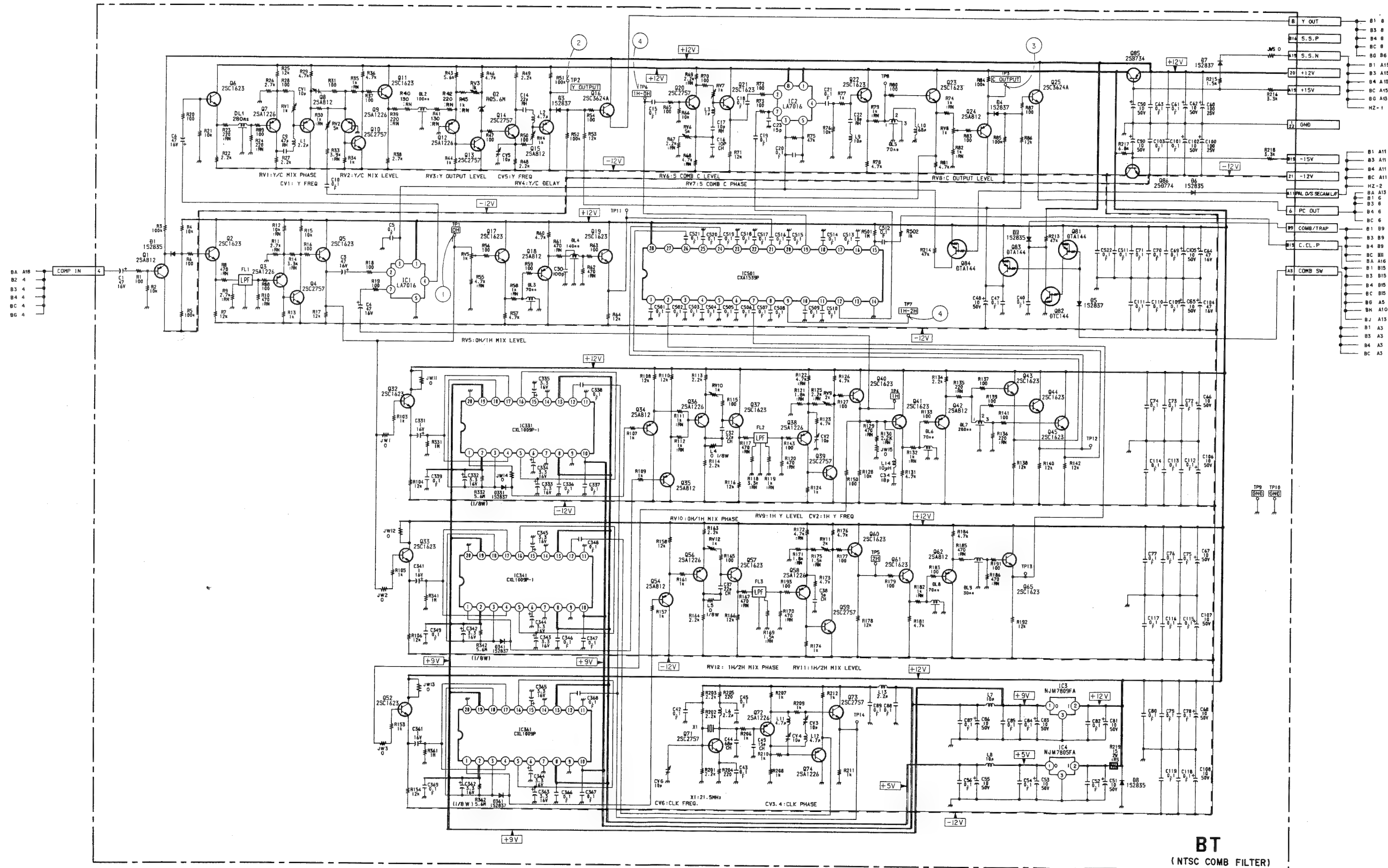
③ 0.58 Vp-p(H)

④ 1.9 Vp-p(H)

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

**BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)**

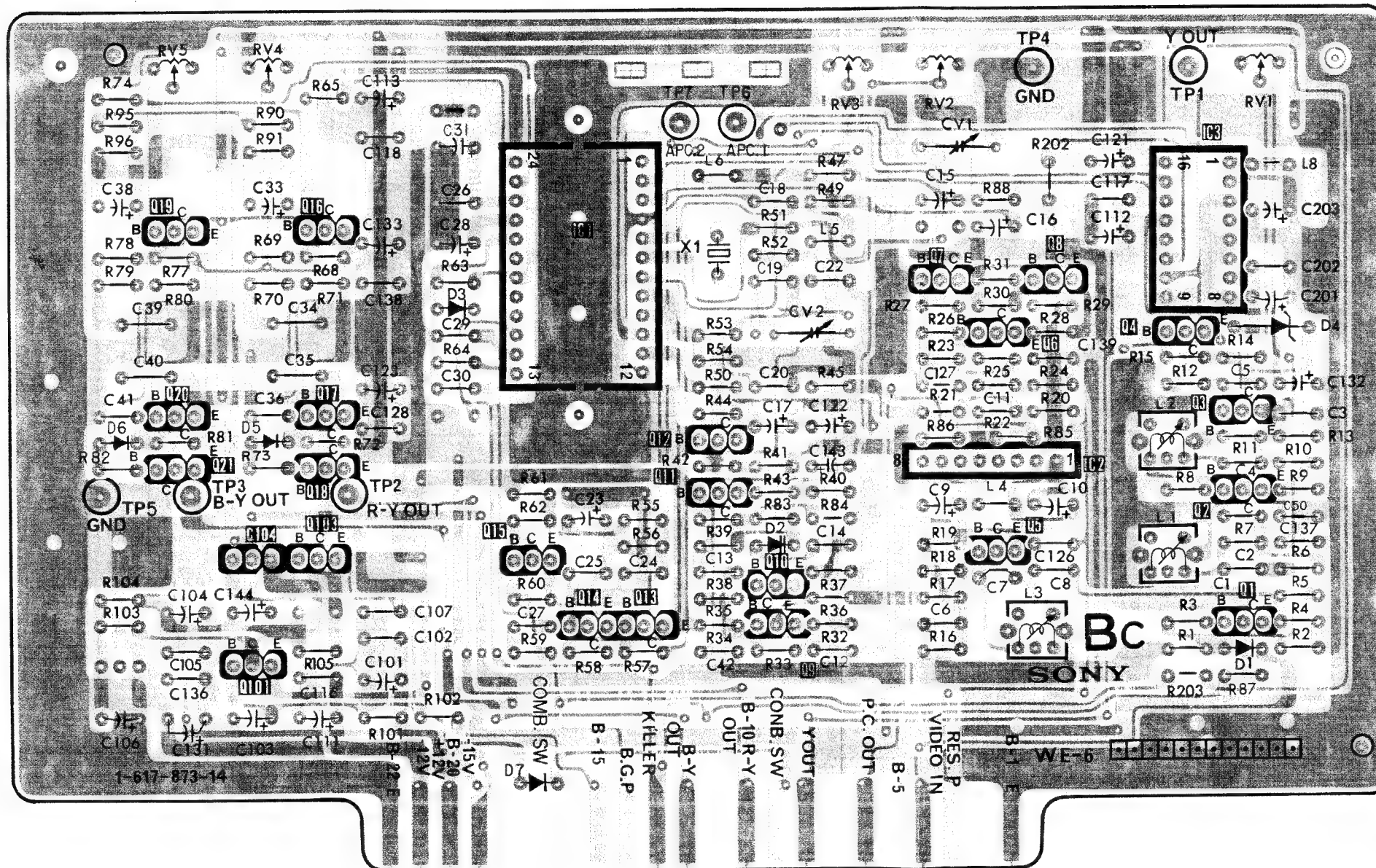
(BVM-1911 ONLY)







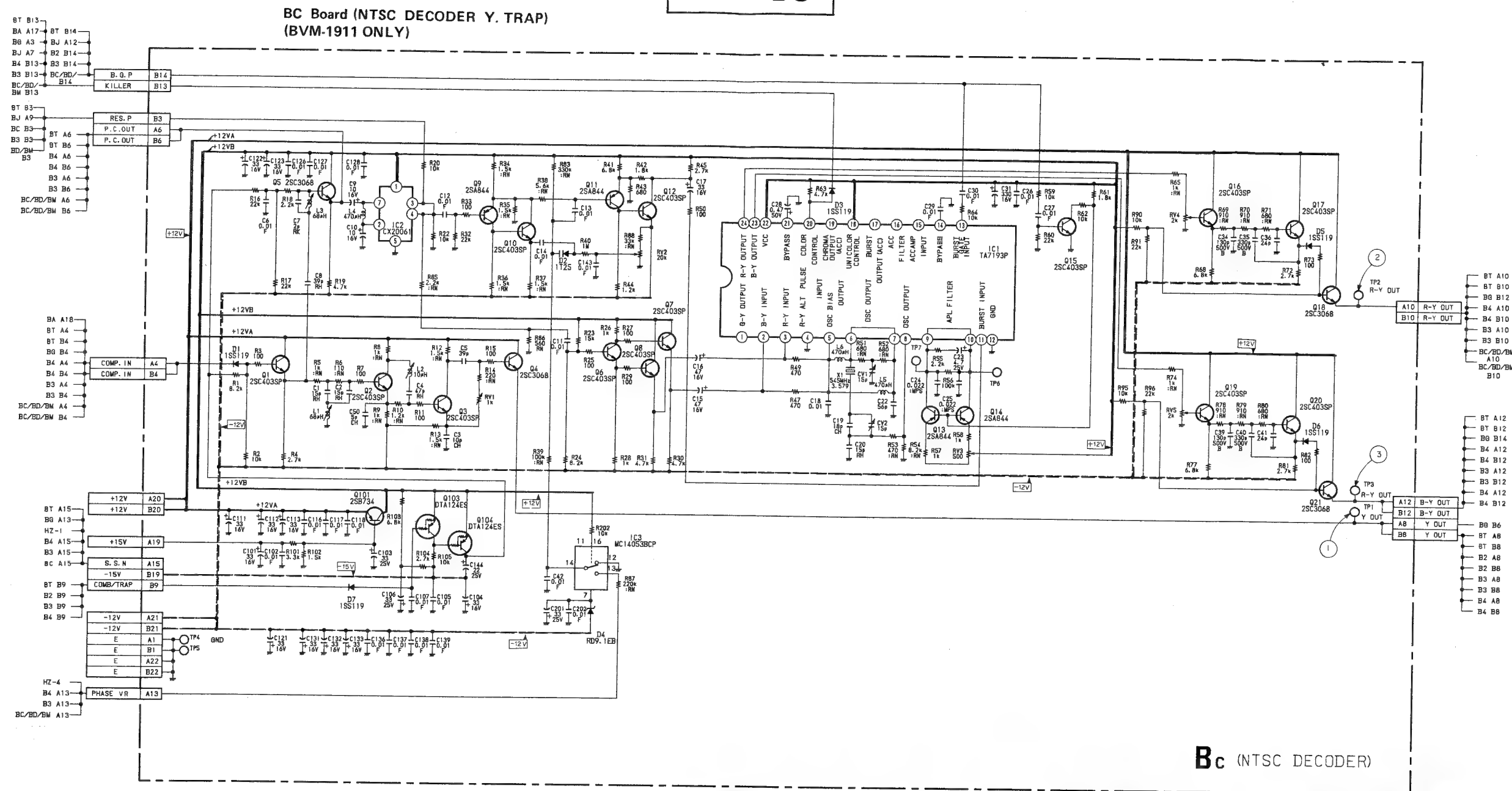
BC Board (NTSC DECODER Y. TRAP)  
(BVM-1911 ONLY)

IC											
Q	19 20 21	16 17 18	104 101	103	15	14	13	12 11	10 9	7 6 5	8 4 3 2 1
D	6	5	3	7	2	1	4				
TP ADJ	RV5	RV4	TP7	TP6	RV3	RV2	TP4	TP1	RV1		
	TP5	TP3	TP2	CV2	CV1						



-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

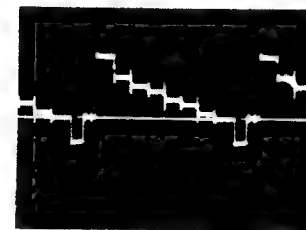




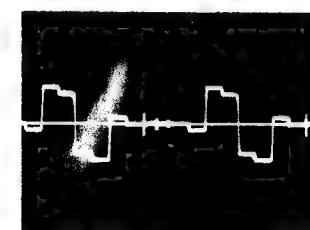
BC BOARD

IC1	TA7193P	DEMODULATOR
2	CX20061	RESIDUAL SWITCH
3	MC14053BCP	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

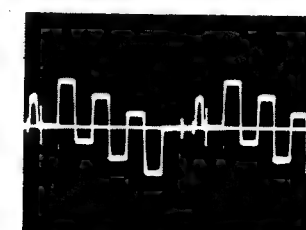
14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB3	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



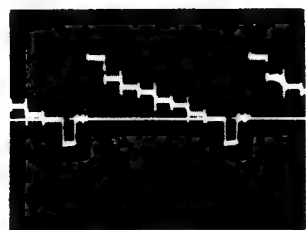
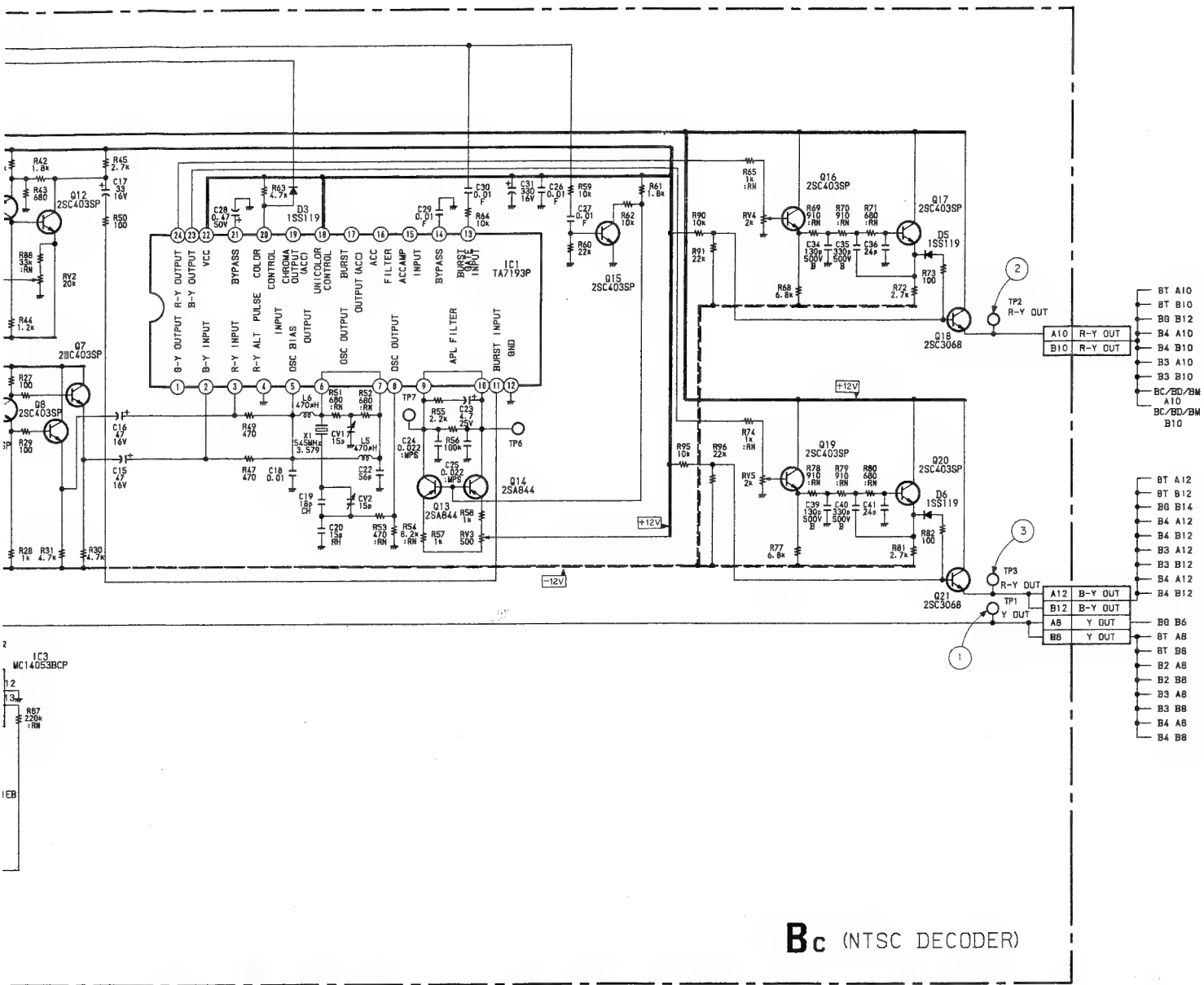
① 1Vp-p (H)



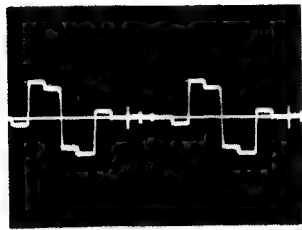
② 0.3Vp-p (H)



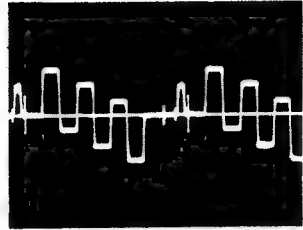
③ 0.36 Vp-p (H)



① 1Vp-p (H)

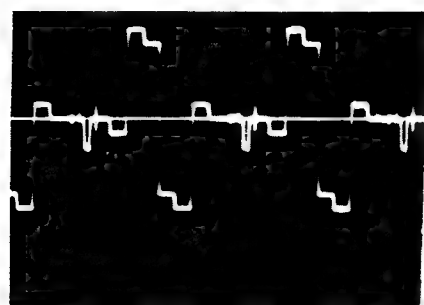
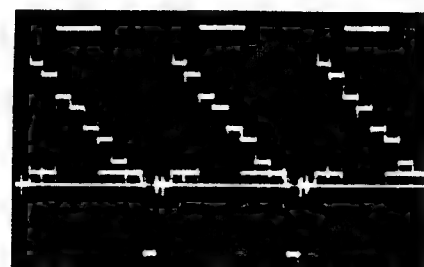


② 0.3Vp-p (H)

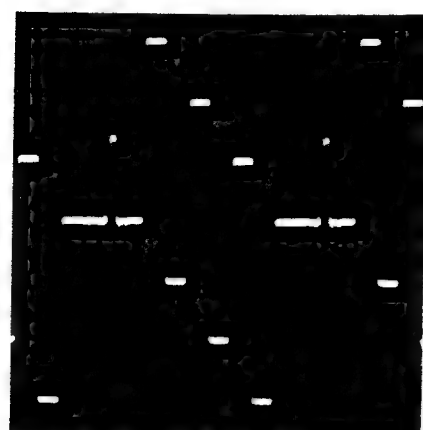


③ 0.36Vp-p (H)

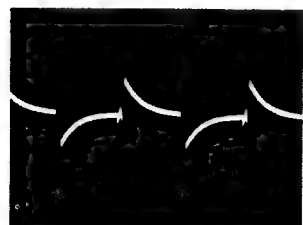
BD board (PAL DECODER Y.TRAP)  
(BVM-2011P ONLY)



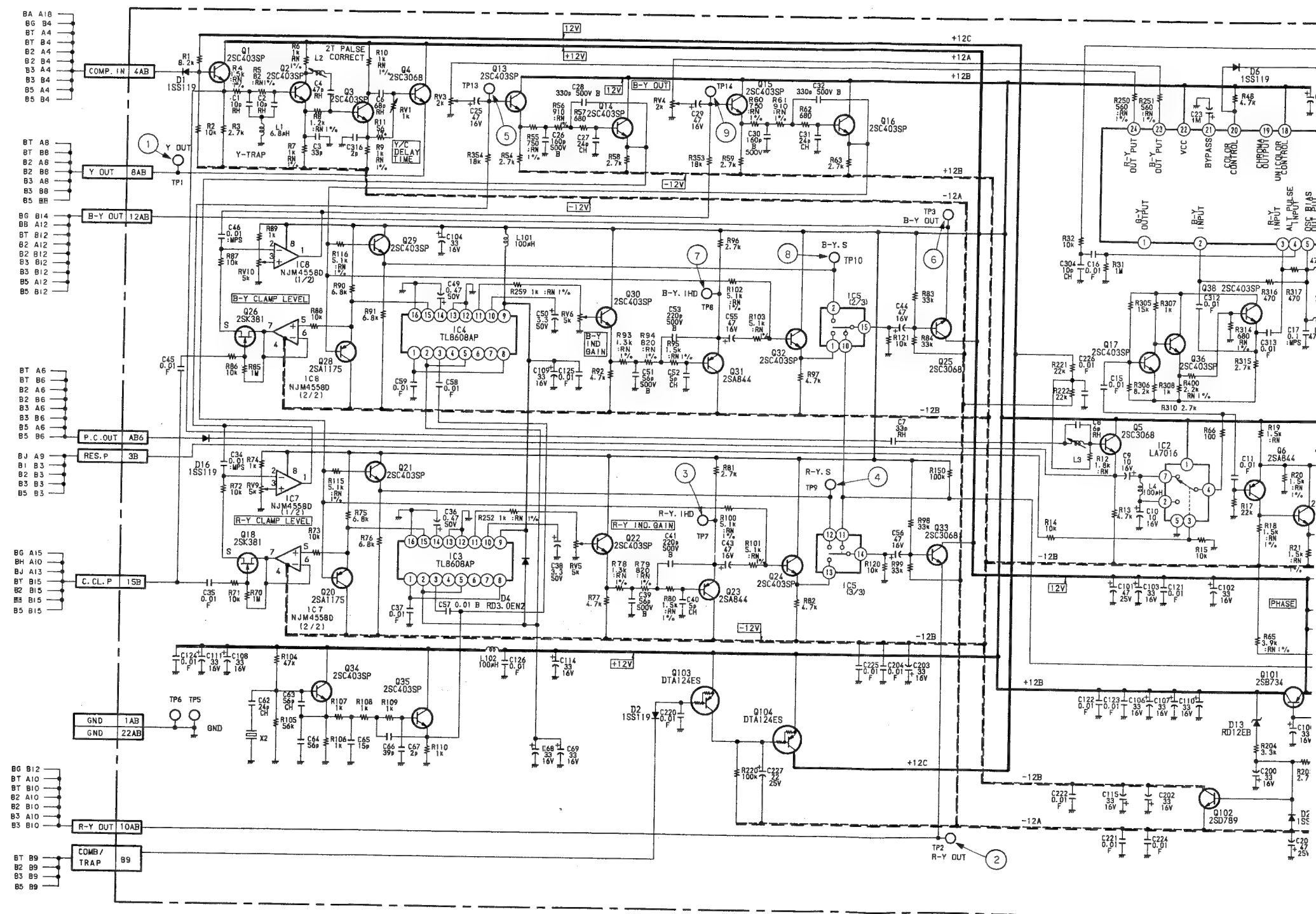
3 0.32Vp-p 4 0.32Vp-p  
5 0.36Vp-p



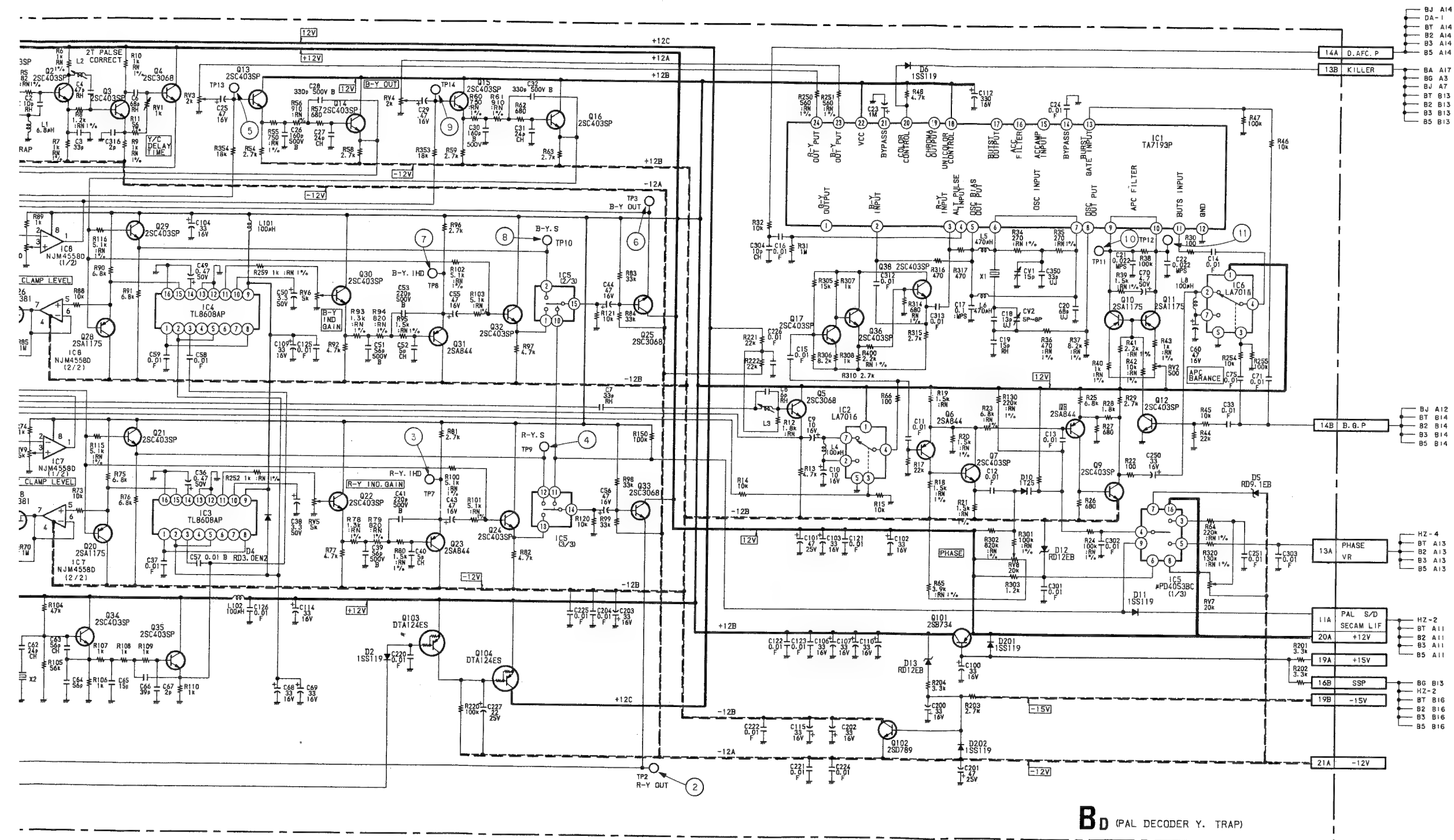
7 0.38Vp-p 8 0.39Vp-p  
9 0.42Vp-p



11 0.26Vp-p (H)



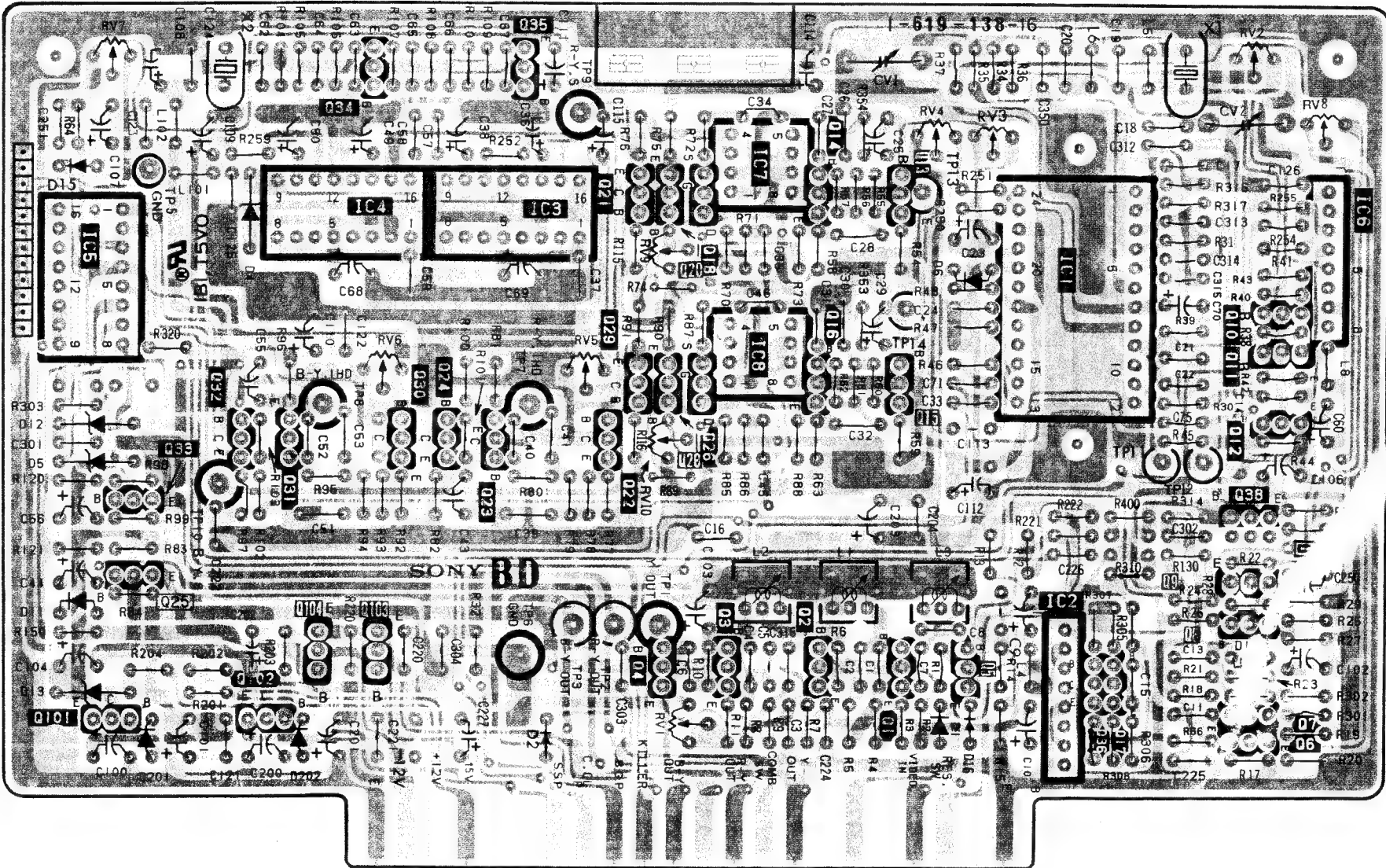
BD BD



**B<sub>D</sub>** (PAL DECODER Y. TRAP)



BD board (PAL DECODER Y. TRAP)  
(BVM-2011P ONLY)

IC	5	4	3	7	2	6
Q		34	35	21 20 18	14 13	10 11 12
	33 25	32 31	30 24 23	22 29 28 26	16 15	38
D	15 12 11 13	101 102 104 103	4 3 2 1	5 6	36,17	9 8 7 6
ADJ	RV7	TP5	TP9	CV1	RV4 RV3	RV2
TP		TP8	RV6	RV5 RV9	TP13	RV8
		TP10	TP7 TP6	TP3 TP2	TP1	TP11 TP12



BD BOARD

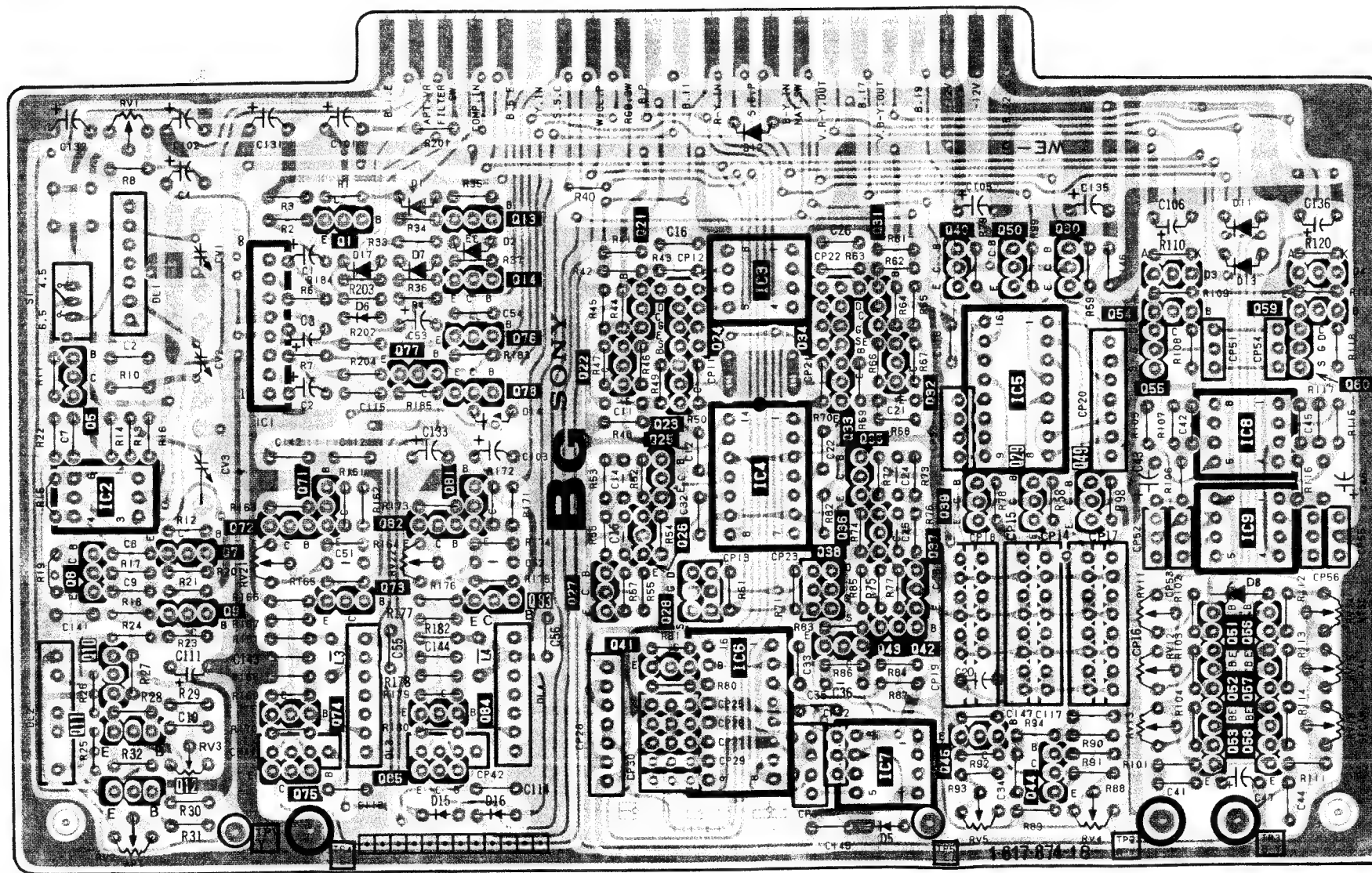
IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	MC14053BCP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	NJM4558P	R-Y CLAMP
8	NJM4558P	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTOR
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC403SP	PHASE CONTROLLER
8	NJM4558P	PHASE CONT. AMP.
9	NJM4558P	PHASE CONT. AMP.
10	2SA1175	APL FILTER
11	2SA1175	APL FILTER
12	2SC403SP	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC403SP	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA1175	BUFFER
21	2SC403SP	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC403SP	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA1175	BUFFER
29	2SC403SP	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC403SP	BUFFER
33	2SC3068	BUFFER
34	2SC403SP	CCD CLOCK GEN
35	2SC403SP	CCD CLOCK GEN
36	2SC403SP	BUFFER
38	2SC403SP	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD7B9	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EB1	CCD BIAS
5	RD9.1EB2	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR

-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.



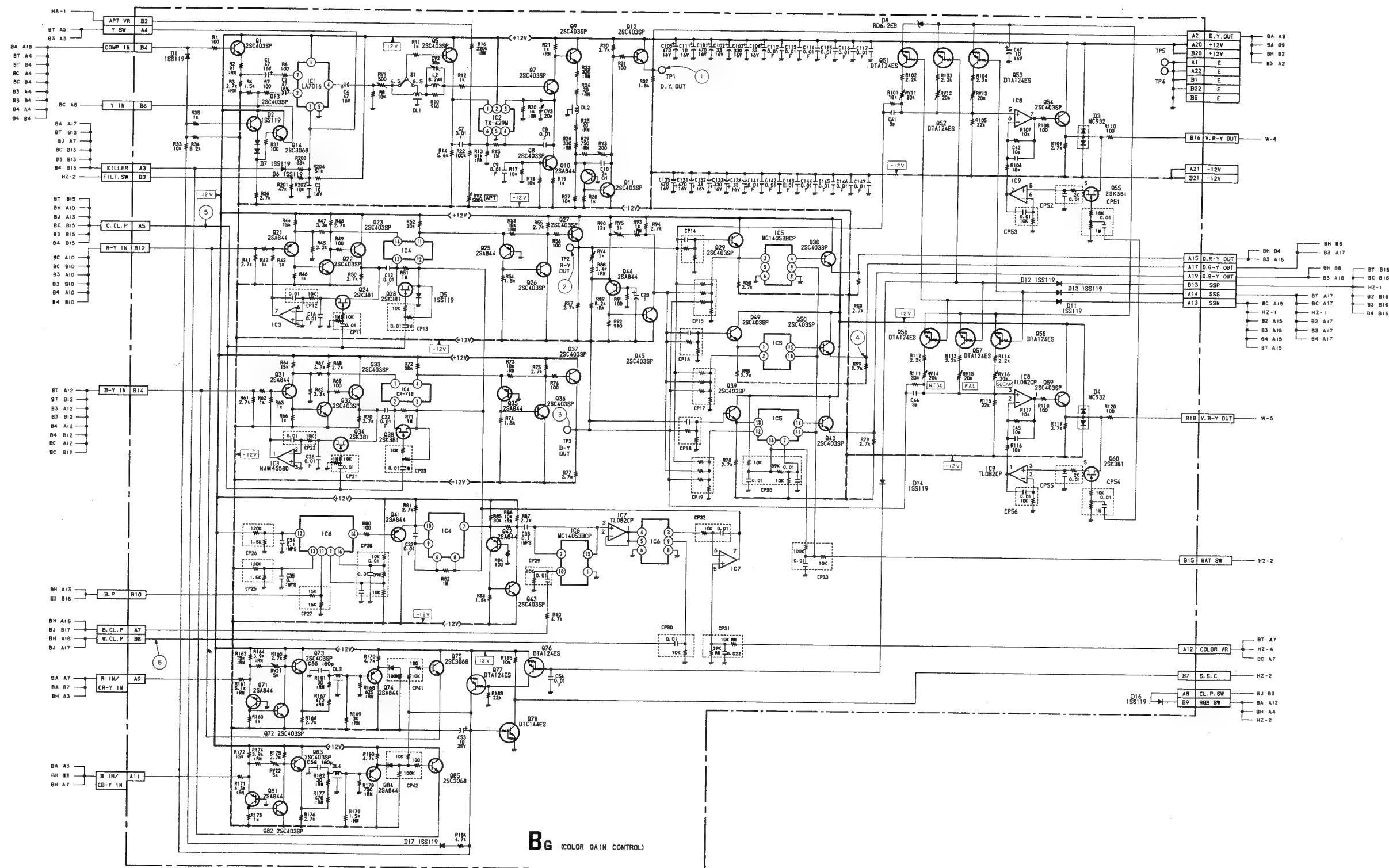
**BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL,  
Y DELAY, VECTOR OUT, NTSC MATRIX SW, G-Y MATRIX AMP)**

IC	1											3 4		5		8 9					
Q	1											6		7		40 50 30		54 55		59 60	
D	5 8 10 11 12 7 9 72 71 73 74 75 77 76 78 81 82 83 84 85											21 22 23 24 25 26 27 28 41		31 32 33 34 35 36 37 38 42 43		39 29 49		45 44		51 52 53 56 57 58	
TP ADJ	RV1											12		5		3		11 13 8		4	
	RV2											RV3 RV21		RV22		RV7 RV11 RV12 RV13		RV4 TP2 TP3		RV14 RV15 RV16	

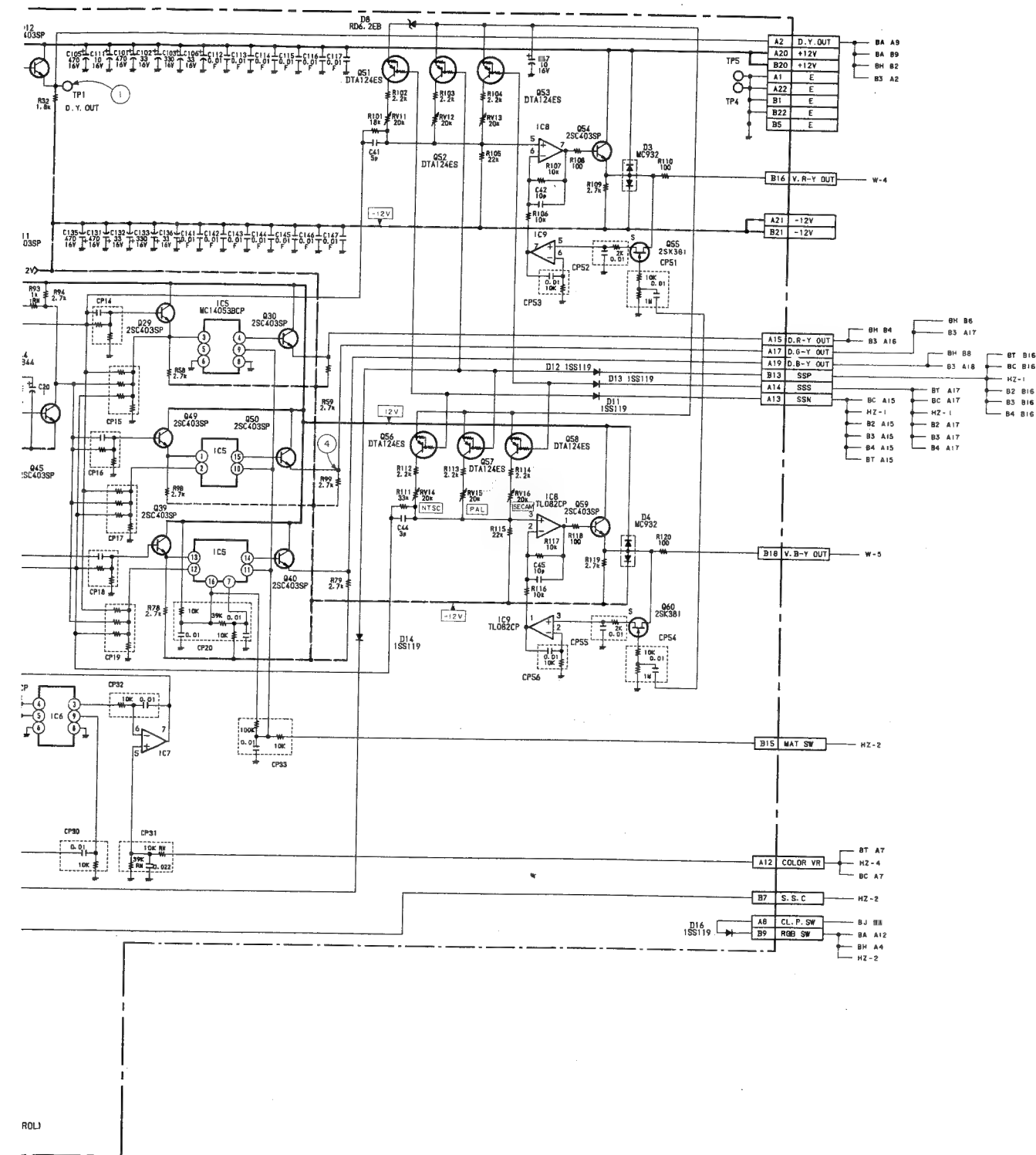


**BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL,  
Y DERAY, VECTOR OUT NTSC MATRIX SW, G-Y MATRIX AMP)**

BG



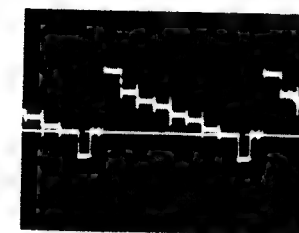
BG BOARD



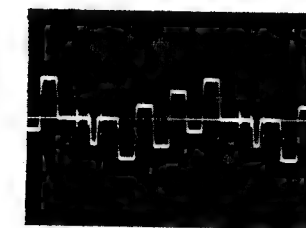
IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	MC14053BCP	MATRIX SW
6	MC14053BCP	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
8	TL082CP	VECTOR OUTPUT
9	TL082CP	VECTOR OUTPUT
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	Y AMP
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL

Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
51	DTA124ES	GAIN CHANGE SW
52	DTA124ES	GAIN CHANGE SW
53	DTA124ES	GAIN CHANGE SW
54	2SC403SP	R-Y BUFF
55	2SK381	R-Y CLAMP
56	DTA124ES	GAIN CHANGE SW
57	DTA124ES	GAIN CHANGE SW
58	DTA124ES	GAIN CHANGE SW
59	2SC403SP	B-Y BUFF
60	2SK381	B-Y CLAMP
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
78	DTC144ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
3	MC932	PROTECT
4	MC932	PROTECT
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
8	RD6.2E-B2	+6V REG
11	1SS119	GAIN CHANGE SW
12	1SS119	GAIN CHANGE SW
13	1SS119	GAIN CHANGE SW
14	1SS119	GAIN CHANGE SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER

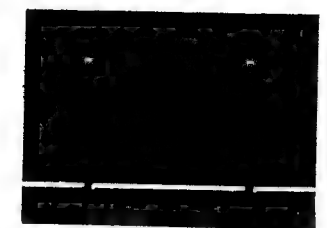
5. DIAGRAMS



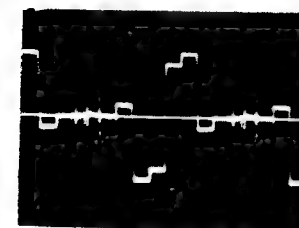
① 1.0Vp-p (H)



③ 1.7Vp-p (H)



⑤ 4.8Vp-p (H)



② 1.4Vp-p (H)



⑥ 12Vp-p (H)

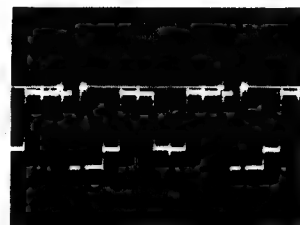
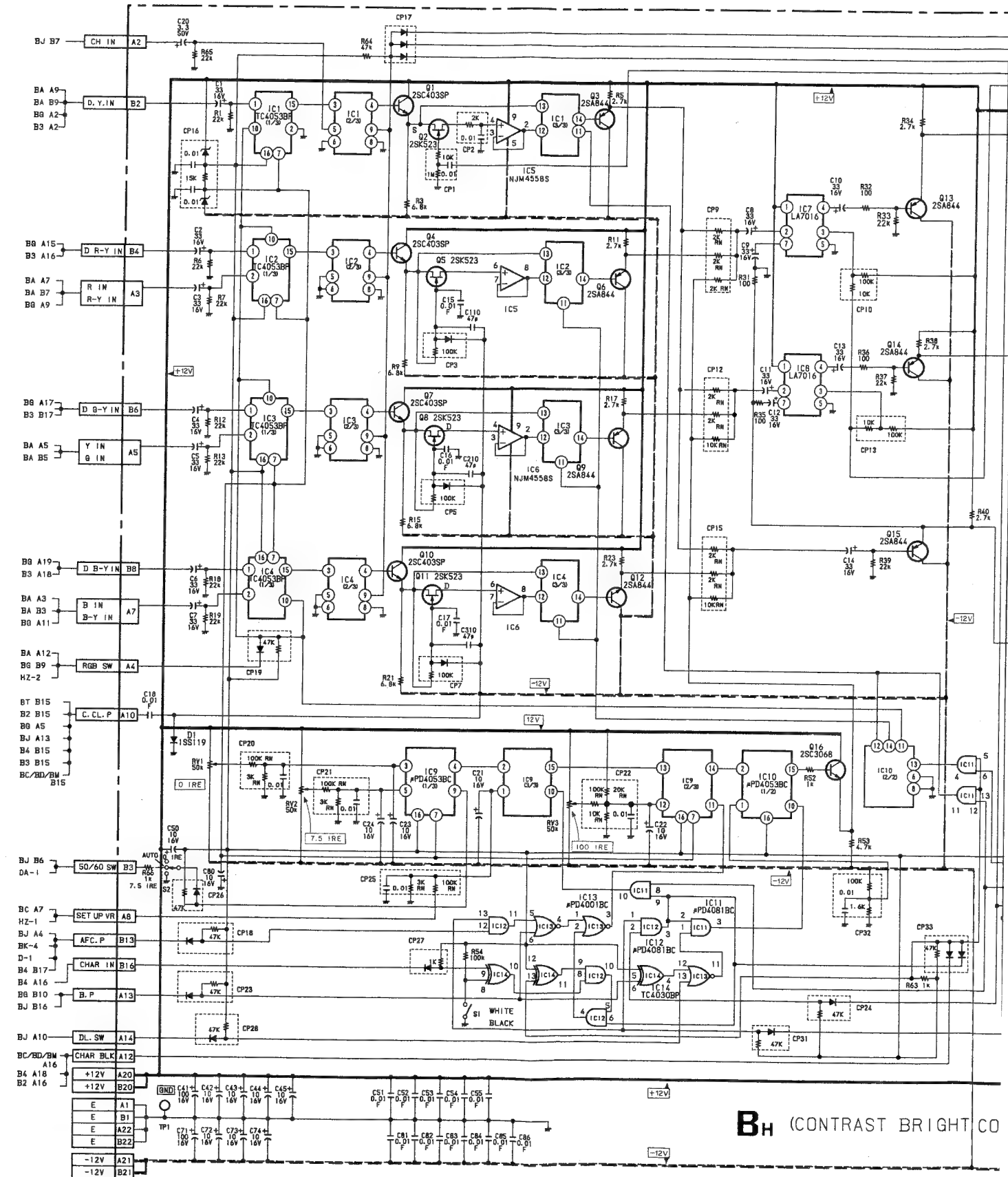


BH BOARD

IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(2/4)		Y SCREENING PULSE GEN
(4/4)		
12	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	MC14001BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF

Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	G CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



1 0.8Vp-p (H)



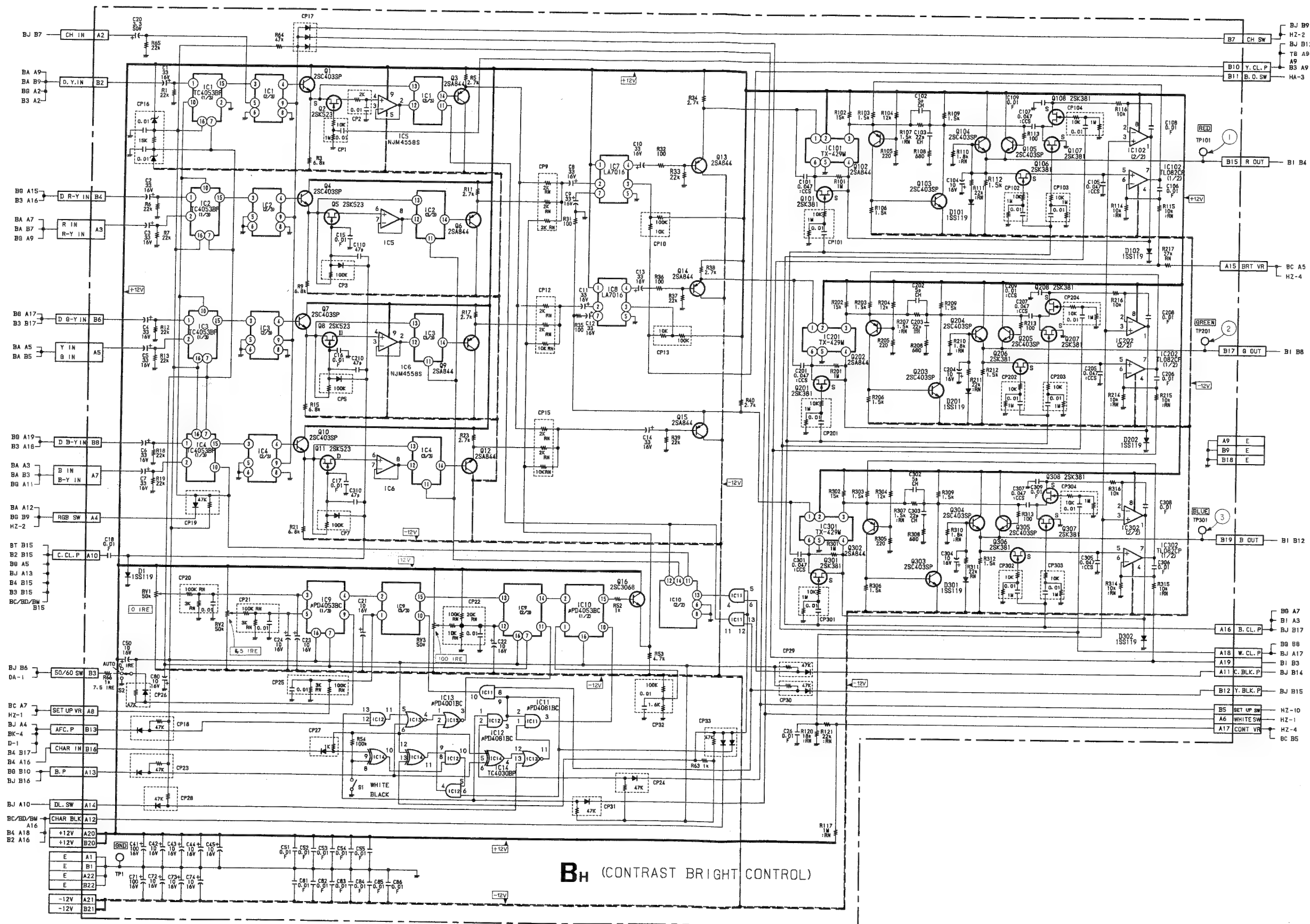
2 0.8Vp-p (H)



3 0.7Vp-p (H)

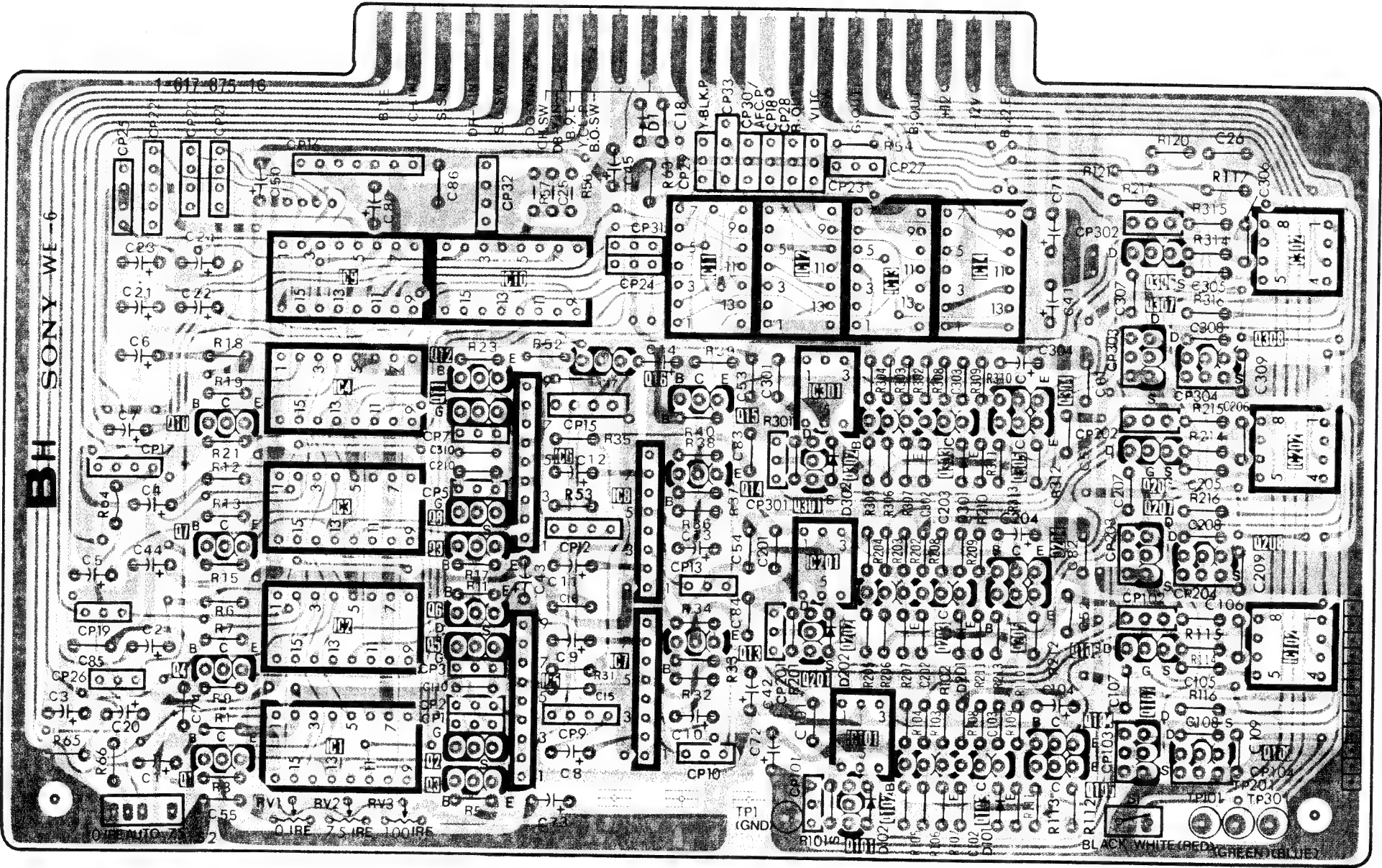
BH (CONTRAST BRIGHT CO



**BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)**



BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

IC	9 4 3 2 1			10  6  5		11  8  7		12 301 201 101		13     102 103		14 304 305 204 205 104 105		102 202 302	
	10  7  4  1			12 11 8 9 6 5 2 3		16   15  14  13		306 307 308 206 207 208 106 107 108							
						1		302 202 102		301 201 101					
	TP ADJ			RV1 RV2 RV3		TP1						TP201 TP101 TP301			

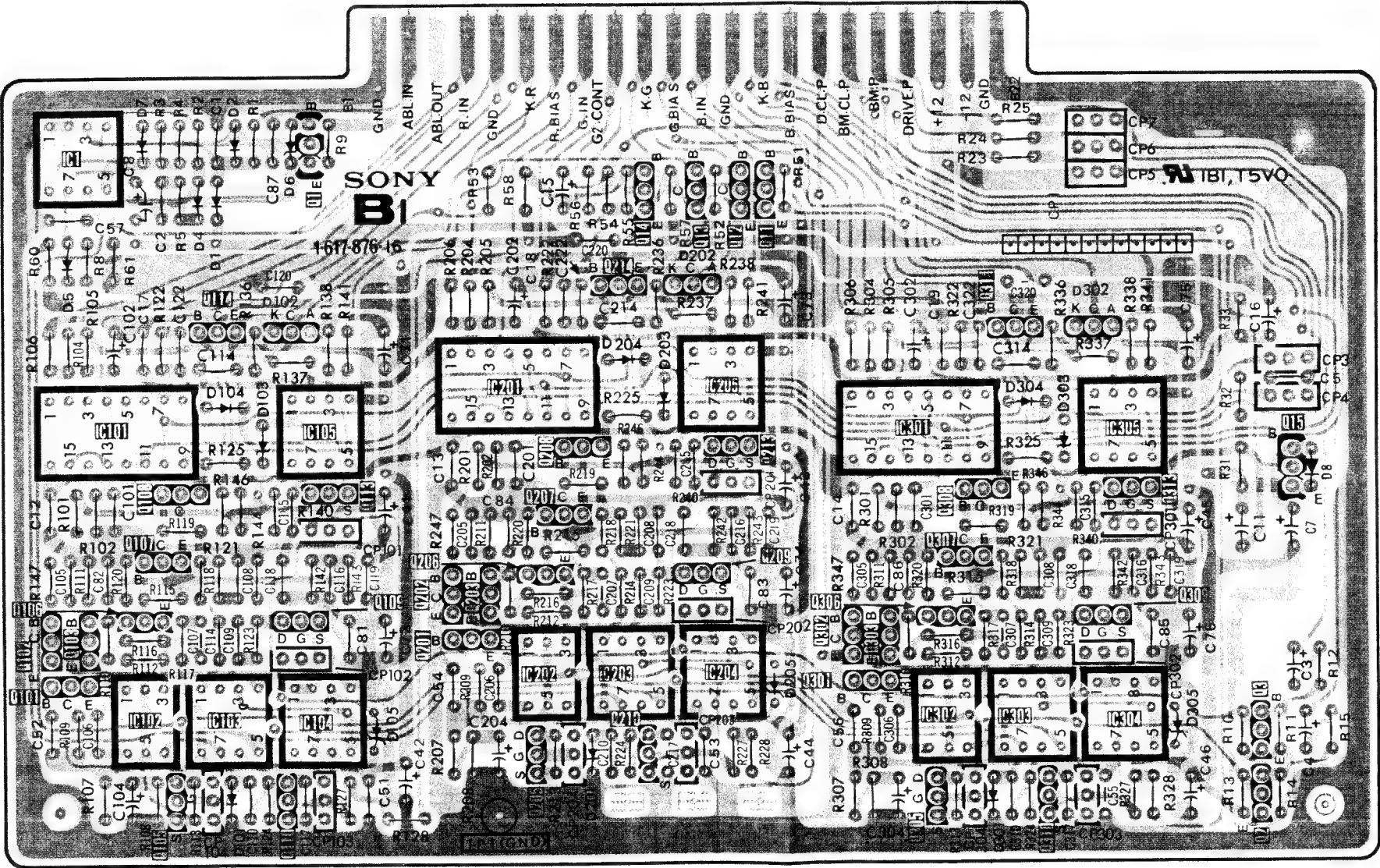


-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

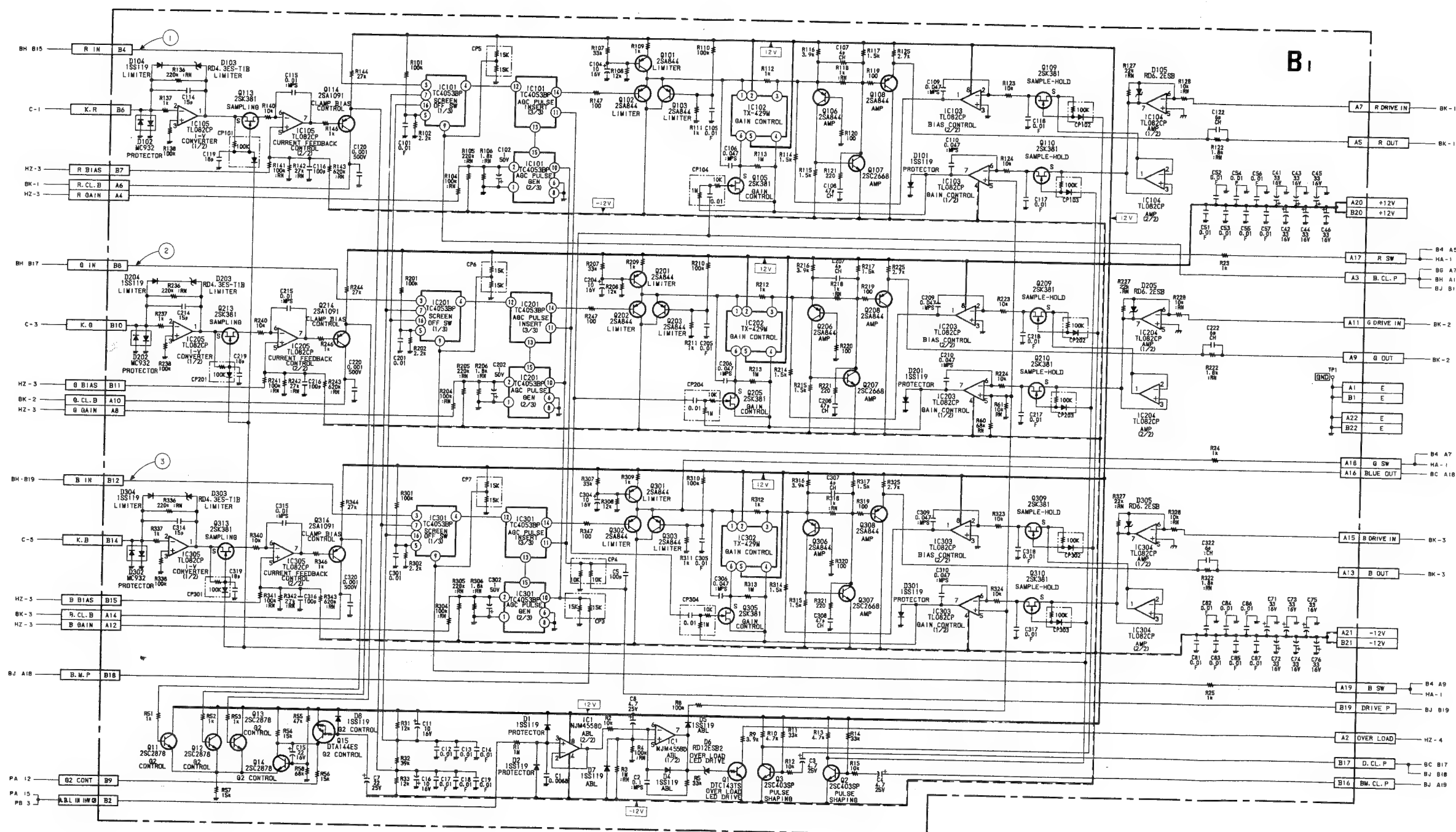


BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	I	101		105	201	205	301	305																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
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- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



## BI BOARD

IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL

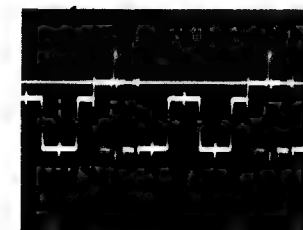
Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLE-HOLD
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLE-HOLD
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLE-HOLD
314	2SA1091	CLAMP BIAS CONTROL

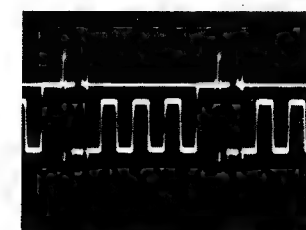
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	HC932	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
D105	RD6.2ESB	LIMITER
201	1SS119	PROTECTOR
202	HC932	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
D205	RD6.2ESB	LIMITER
301	1SS119	PROTECTOR
302	HC932	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
D305	RD6.2ESB	LIMITER

5. DIAGRAMS

5. DIAGRAMS



① 1.0Vp-p(H)



③ 1.0Vp-p(H)



② 1.0Vp-p(H)

IC1		HD14538BP	PIC.SET.PULSE GEN
2		MC14001BCP	CROSS HATCH GEN
3		TC4040BP	V SYNC & DELAY
4		TC4040BP	V COUNT
5		TC504027BP	V SYNC & DELAY
6(1/2)		TC504027BP	CHROMA CLAMP PULSE GEN
(2/2)			2FH MULTI
7		TC504027BP	V COUNT
8		TC504027BP	1H PULSE PROCESS
9(1/2)		TC50427BP	V SYNC & DELAY
(2/2)			1H PULSE PROCESS
10(1/2)		HD14538BP	B.G.P GEN 2
(2/2)			H CYCLE
11(1/2)		HD14538BP	CROSS HATCH GEN
(2/2)			SPLIT Y BLK, C BLK PULSE GEN
12		HD14538BP	Y CYCLE AGC & CLAMP PULSE GEN
13(1/4)			CHROMA CLAMP PULSE GEN
(2/4)			Y.CL.P GEN
(3/4)		MC14001BCP	B.G.P GEN 2
(4/4)			RESIDUAL PULSE GEN
14(1/4)			
(3/4)		MC14001BCP	SPLIT Y BLK: C BLK PULSE GEN
(4/4)			
(2/4)			V CYCLY AGC & CLAMP PULSE GEN
15		MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
16(1/4)			CROSS HATCH GEN
(2/4)		MC14011BCP	Y CYCLE AGC & CLAMP PULSE GEN
(3/4)			GEN
(4/4)			H OR V BLK, P
17		MC14011BCP	SPLIT Y BLK, C BLK PULSE GEN
18		TC4023BP	CROSS HATCH GEN
19(1/4)			CROSS HATCH GEN
(2/4)			V COUNT
(3/4)		MC14081BCP	V SYNC & DELAY
(4/4)			2FH MULTI
20			1H PULSE PROCESS
21(1/4)		MC14081BCP	V COUNT
(2/4)			V CYCLE AGC & CLAMP PULSE GEN
(3/4)		MC14071BCP	V SYNC & DELAY
(4/4)			V COUNT
22(1/4)			2FH MULTI
(2/4)			
(3/4)		MC14071BCP	V COUNT
(4/4)			V SYNC & DELAY

IC23(1/3)		V SYNC & DELAY
(2/3)	TC4073BP	V COUNT
(3/3)		V SYNC & DELAY
24(1/5)		
(4/5)	MC14069UBCP	CROSS HATCH GEN
(2/5)		V COUNT
(3/5)		1H PULSE PROCESS
(5/5)		INV
25(1/6)		H OR V BLK.P
(2/6)	MC14069UBCP	Y CYCLE AGC & CLAMP PULSE GEN
(3/6)		CROSS HATCH GEN
(4/6)		1H PULSE PROCESS
(5/6)	MC14175BCP	CLAMP PULSE CHANGE SW
(6/6)		CROSS HATCH GEN
26		H OR V DL SW
27(1/3)	MC14053BCP	CROSS HATCH GEN
(2/3)		H OR V DL SW
(3/3)		CROSS HATCH GEN
28	TC4520BP	B.G.P GEN 1
29(1/2)	HD14538BP	Y.CL.P GEN
(2/2)		
Q14	2SC2785	CROSS HATCH GEN
15	2SC2785	Y.CL.P GEN
16	2SC2785	Y.CL.P GEN
17	2SC2785	CHROMA CLAMP PULSE GEN
18	2SC2785	CHROMA CLAMP PULSE GEN
19	2SA1115	H CYCLE
20	2SC2785	H CYCLE
21	2SC2785	H CYCLE
22	2SC2785	H CYCLE
23	2SA1048	H CYCLE
24	2SC2785	H CYCLE
25	2SC2785	CHROMA CLAMP PULSE GEN
26	2SC2785	Y.CL.P GEN
D1	1SS119	CROSS HATCH GEN
2	1SS119	H CYCLE
3	1SS119	H CYCLE
7	1SS119	1H PULSE PROCESS
8	1SS119	V SYNC & DELAY
9	1SS119	2FH MULTI
11	MC932	PROT



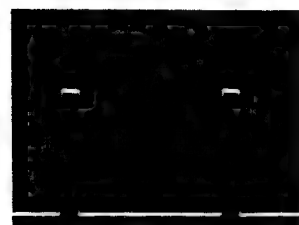
(1) 12Vp-p (H)  
(2) 12Vp-p (H)



③ 12Vp-p (V)

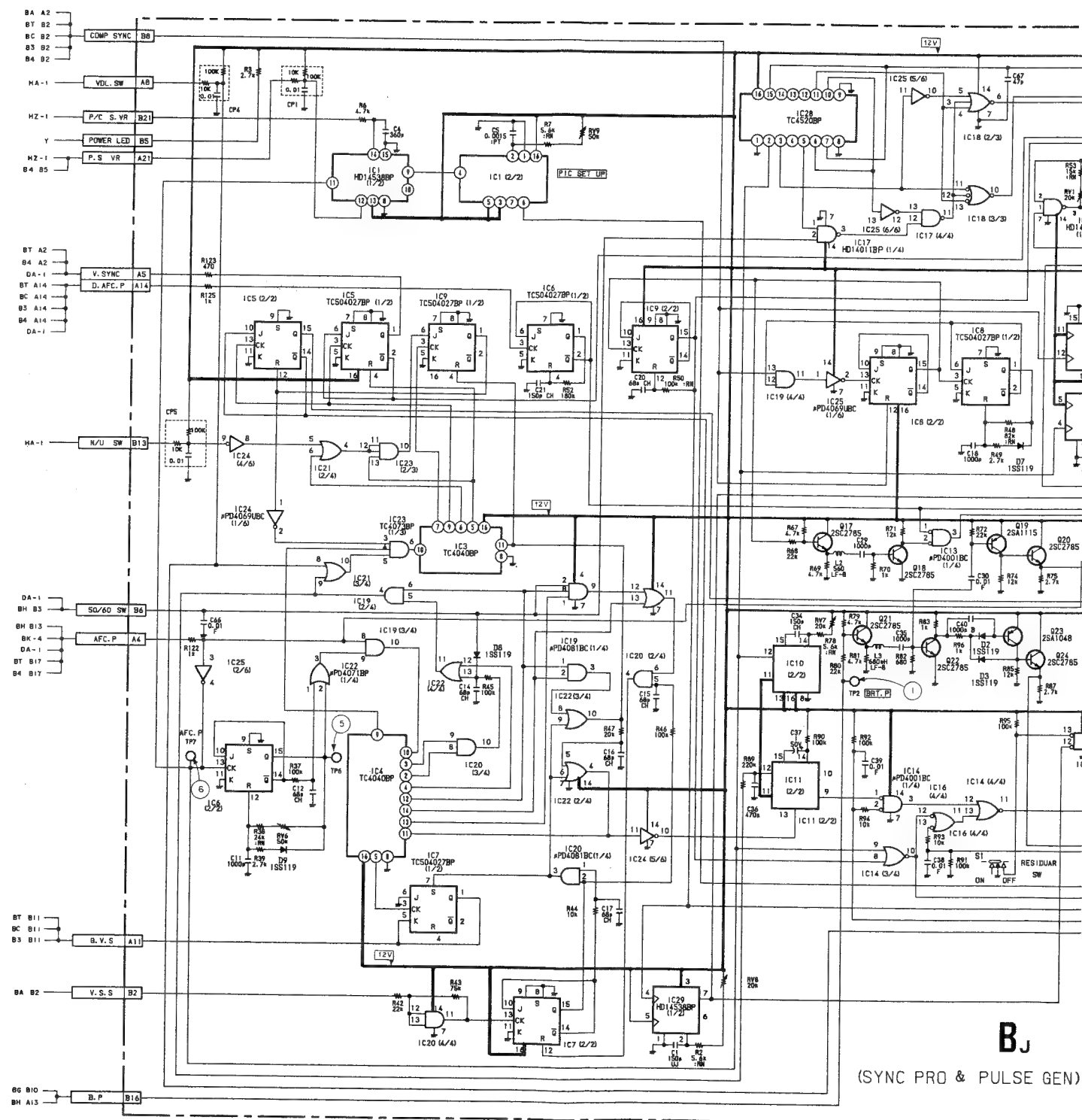


④ 12Vp-p (H)  
⑤ 12Vp-p (H)



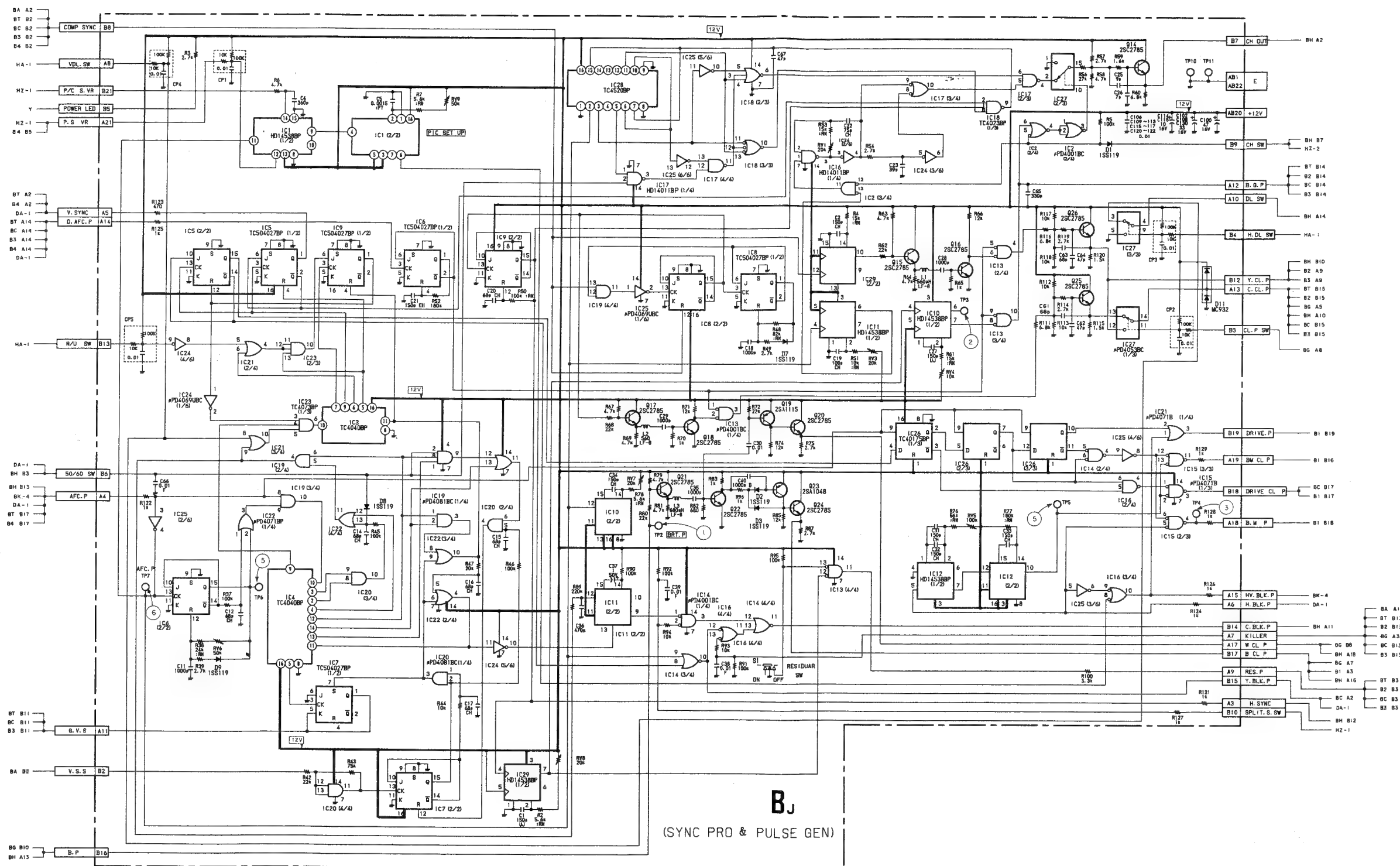
⑥ 12Vp-p (H)

**BJ board (SYNC PROCESSING & PULSE GEN)**





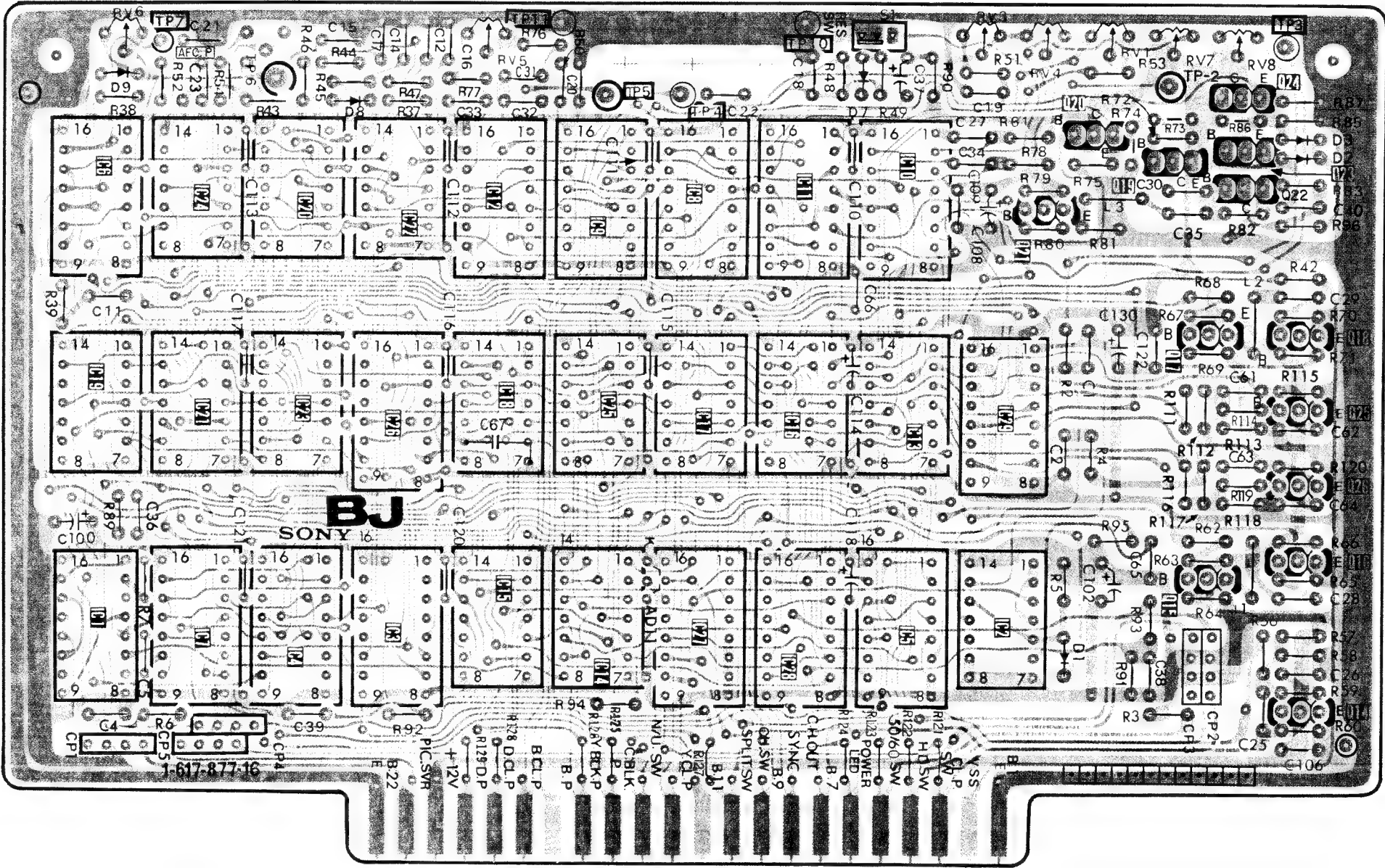
**BJ board (SYNC PROCESSING & PULSE GEN)**





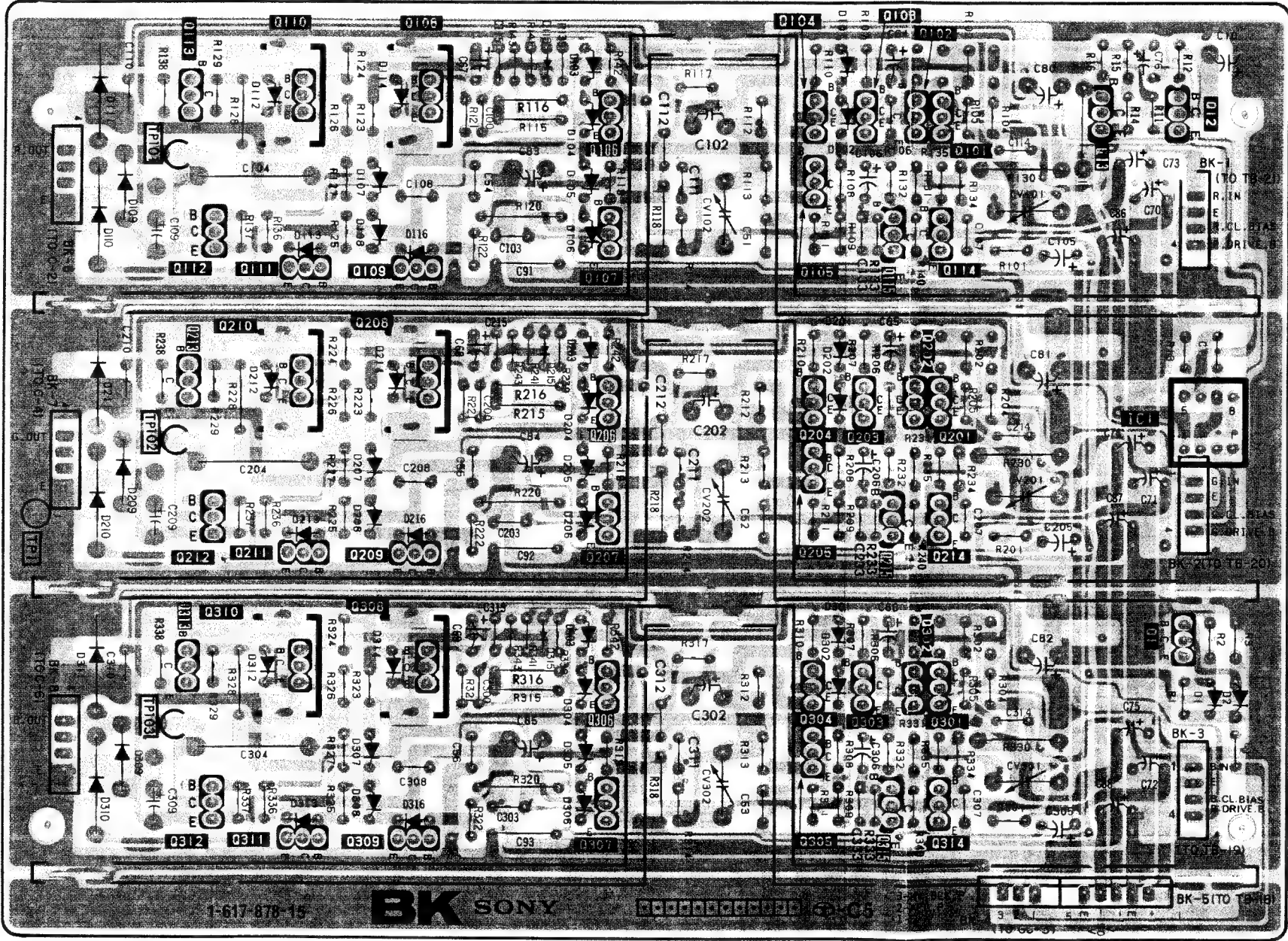
BJ board (SYNC PROCESSING & PULSE GEN)

IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2								
Q											21	20	19	17	24 23 22	18 25 26 16 14		
D	9	8				11					7				3 2			
TP ADJ	RV6 TP7		TP6		RV5	TP11	TP5	TP4	TP10		RV3	RV4	RV1	RV7 TP2	RV8	TP3		



BK board (VIDEO OUT AMP)

IC															I
Q		113		110		108		106		104	103	102	101	13	12
		112		111		109		107		105	115	114			
		213		210		208		206		204	203	202	201		
		212		211		209		207		205	215	214			I
		313		310		308		306		304	303	302	301		
		312		311		309		307		305	315	314			
D		111													
		110	109		112		107	114	115	104	103		101		
		211			113		108	116		106	105		102		
		210	209		212		207	214	215	204	203		201		
		311			213		208	216		206	205		202		
		310				307	314	315	304	303		301			
		310	309		312		308	316		306	305		302		I 2
TP		TPI01						CV102			CV101				
ADJ		TPI02						CV202			CV201				
	TPI	TPI03						CV302			CV301				

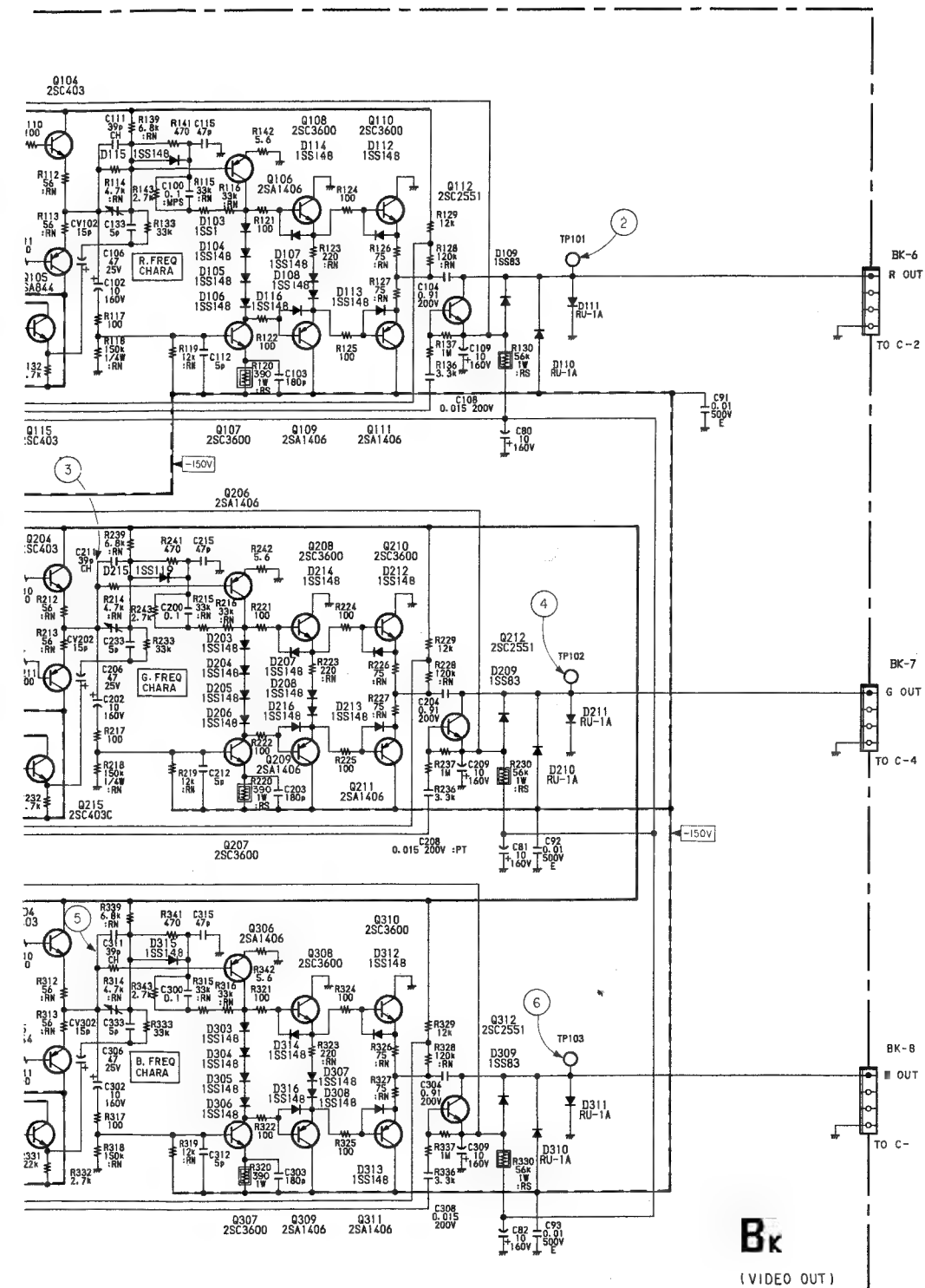


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.





## BK BOARD

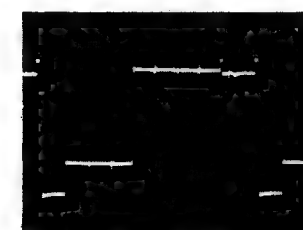


IC1	NJM4558D	LIPPLE FILTER
Q1	2SA844	INVERTER
12	2SA1091	LIPPLE FILTER
13	2SA1091	LIPPLE FILTER
101	2SC2668	R-PRE AMP.
102	2SA844	R-PRE AMP.
103	2SC403SP	BUFF.
104	2SC403SP	BUFF.
105	2SA844	BUFF.
106	2SA1406	R-VIDEO OUT
107	2SC3600	R-VIDEO OUT
108	2SC3600	BUFF.
109	2SA1406	BUFF.
110	2SC3600	BUFF.
111	2SA1406	BUFF.
112	2SC2551	R-CLAMP
113	2SC403SP	R-CLAMP
114	2SC403SP	R-CLAMP
115	2SC403SP	BLANK PULSE BUFF.
201	2SC2668	G-PRE AMP.
202	2SA844	G-PRE AMP.
203	2SC403SP	BUFF.
204	2SC403SP	BUFF.
205	2SA844	BUFF.
206	2SA1406	G-VIDEO OUT
207	2SC3600	G-VIDEO OUT
208	2SC3600	BUFF.
209	2SA1406	BUFF.
210	2SC3600	BUFF.
211	2SA1406	BUFF.
212	2SC2551	G-CLAMP
213	2SC403SP	G-CLAMP
214	2SC403SP	G-CLAMP
215	2SC403SP	BLANK PULSE BUFF.
301	2SC2668	B-PRE AMP.
302	2SA844	B-PRE AMP.
303	2SC403SP	BUFF.
304	2SC403SP	BUFF.
305	2SA844	BUFF.
306	2SA1406	B-VIDEO OUT
307	2SC3600	B-VIDEO OUT
308	2SC3600	BUFF.
309	2SA1406	BUFF.
310	2SC3600	BUFF.
311	2SA1406	BUFF.
312	2SC2551	B-CLAMP
313	2SC403SP	B-CLAMP
314	2SC403SP	B-CLAMP
315	2SC403SP	BLANK PULSE BUFF.

D1	1SS148	INVERTER
2	1SS148	INVERTER
101	1SS148	BIAS
102	1SS148	BIAS
103	1SS148	BIAS
104	1SS148	BIAS
105	1SS148	BIAS
106	1SS148	BIAS
107	1SS148	BIAS
108	1SS148	BIAS
109	1SS83	CLAMP
110	RU-1A	PROTECTOR
111	RU-1A	PROTECTOR
112	1SS148	PROTECTOR
113	1SS148	PROTECTOR
114	1SS148	PROTECTOR
115	1SS148	PROTECTOR
116	1SS148	PROTECTOR
201	1SS148	BIAS
202	1SS148	BIAS
203	1SS148	BIAS
204	1SS148	BIAS
205	1SS148	BIAS
206	1SS148	BIAS
207	1SS148	BIAS
208	1SS148	BIAS
209	1SS83	CLAMP
210	RU-1A	PROTECTOR
211	RU-1A	PROTECTOR
212	1SS148	PROTECTOR
213	1SS148	PROTECTOR
214	1SS148	PROTECTOR
215	1SS148	PROTECTOR
216	1SS148	PROTECTOR
301	1SS148	BIAS
302	1SS148	BIAS
303	1SS148	BIAS
304	1SS148	BIAS
305	1SS148	BIAS
306	1SS148	BIAS
307	1SS148	BIAS
308	1SS148	BIAS
309	1SS83	CLAMP
310	RU-1A	PROTECTOR
311	RU-1A	PROTECTOR
312	1SS148	PROTECTOR
313	1SS148	PROTECTOR
314	1SS148	PROTECTOR
315	1SS148	PROTECTOR
316	1SS148	PROTECTOR



① 3.6Vp-p (H)



③ 4.0Vp-p (H)



⑤ 3.0Vp-p (H)



② 60Vp-p (H)

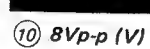
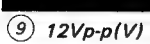
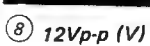
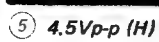
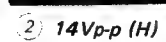
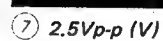
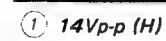
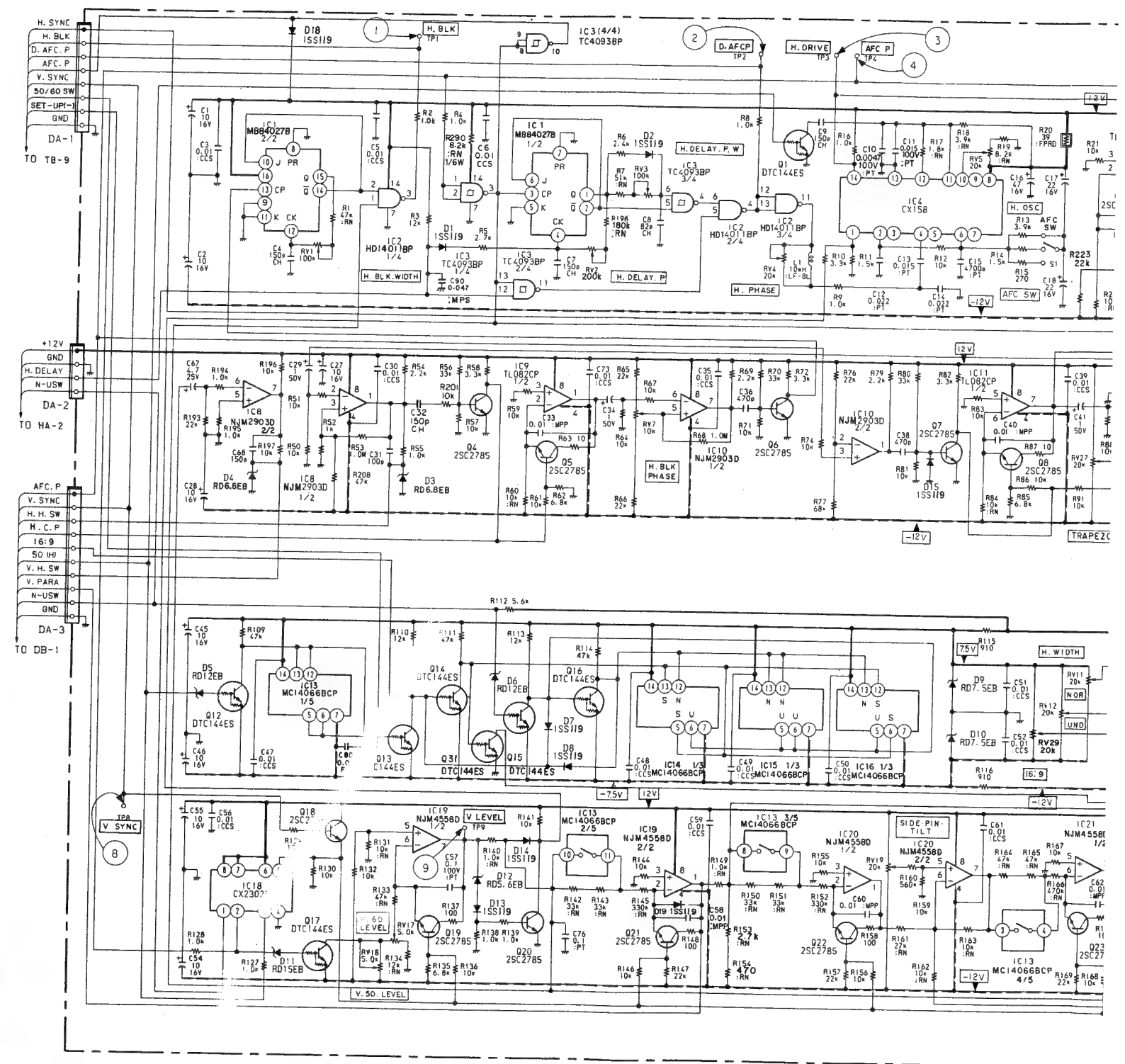


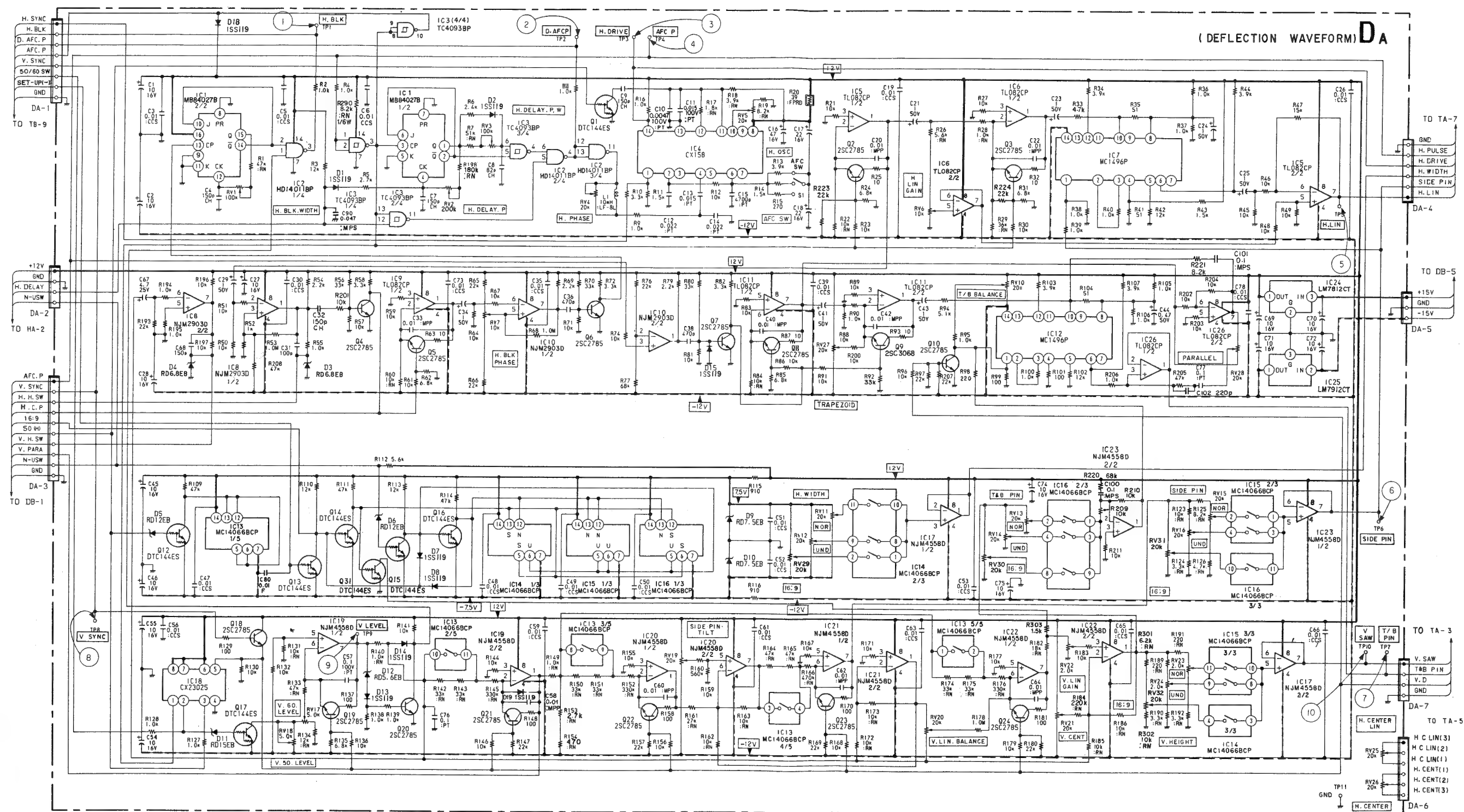
④ 66Vp-p (H)



⑥ 54Vp-p (H)

8	2SC2785	T & B PIN. GEN.
9	2SC3068	T & B PIN. GEN.
10	2SC2785	T & B PIN. MOD.
12	DTC144ES	50/60 SW
13	DTC144ES	SCAN. SW
14	DTC144ES	SCAN. SW
15	DTC144ES	SCAN. SW
16	DTC144ES	SCAN. SW
17	DTC144ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2785	V. SAW. GEN
20	2SC2785	V. SAW. CLIP
21	2SC2785	SIDE PIN GEN
22	2SC2785	SIDE PIN GEN
23	2SC2785	SIDE PIN GEN
24	2SC2785	V. SAW GEN.
31	DTC144ES	V. LIN GEN
D1	1SS148	H. DELAY SW
2	1SS148	H. DELAY SW
3	RD6. 8EB3	CLIPPER
4	RD6. 8EB3	CLIPPER
5	RD12E-B3	50/60 SW
6	RD12E-B3	SCAN SW
7	1SS148	SCAN SW
8	1SS148	SCAN SW
9	RD7. 5E-B3	+7.5V REG.
10	RD7. 5E-B3	-7.5V REG.
11	RD15E-B3	50/60 SW.
12	RD5. 6E-B2	V. SAW. CLIP
13	1SS148	V. SAW. CLIP
14	1SS148	V. SAW. CLIP
15	1SS148	AFC.CLIP
18	1SS148	PROT
19	1SS148	

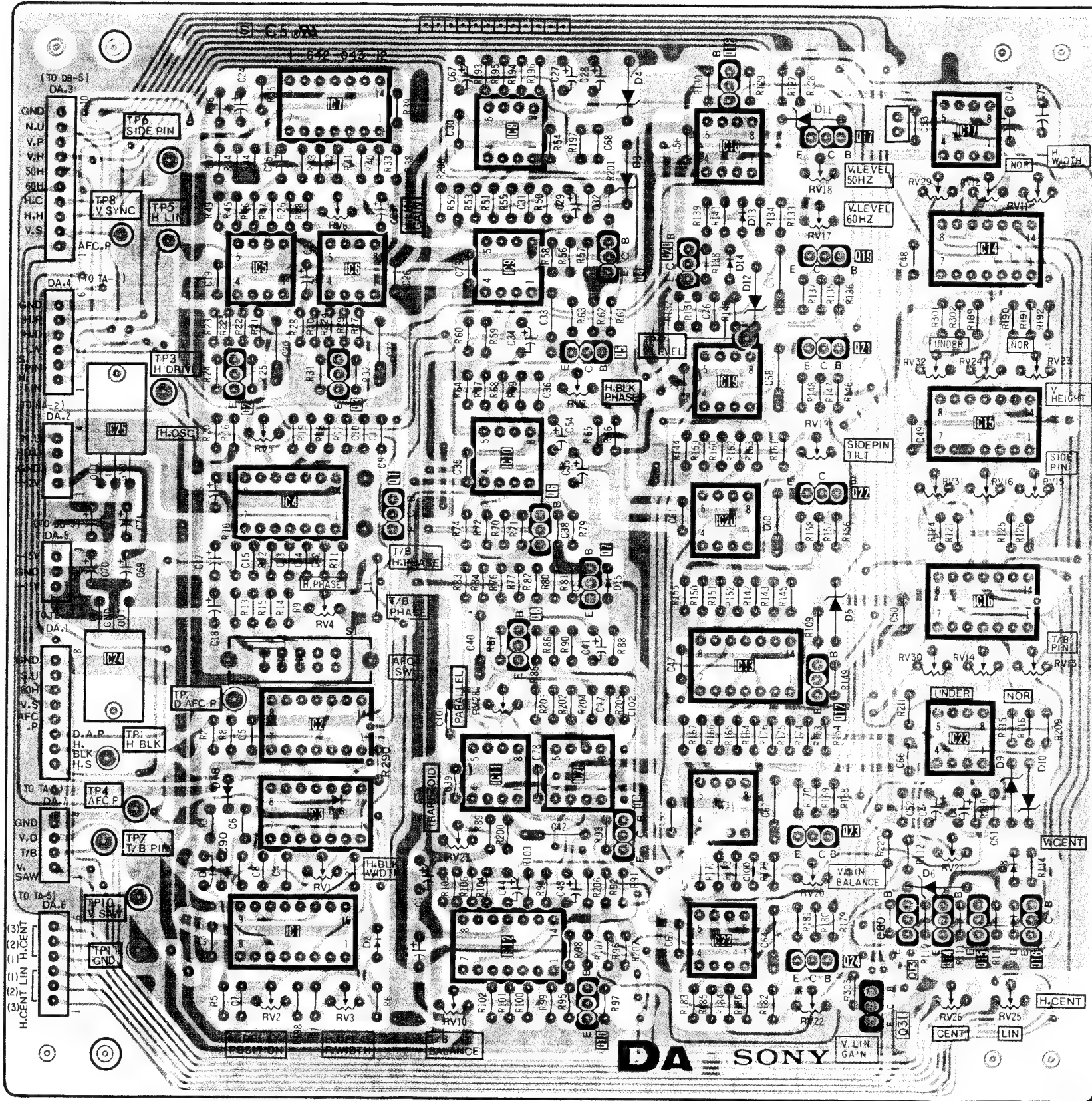






DA board (DEFLECTION WAVEFORM)

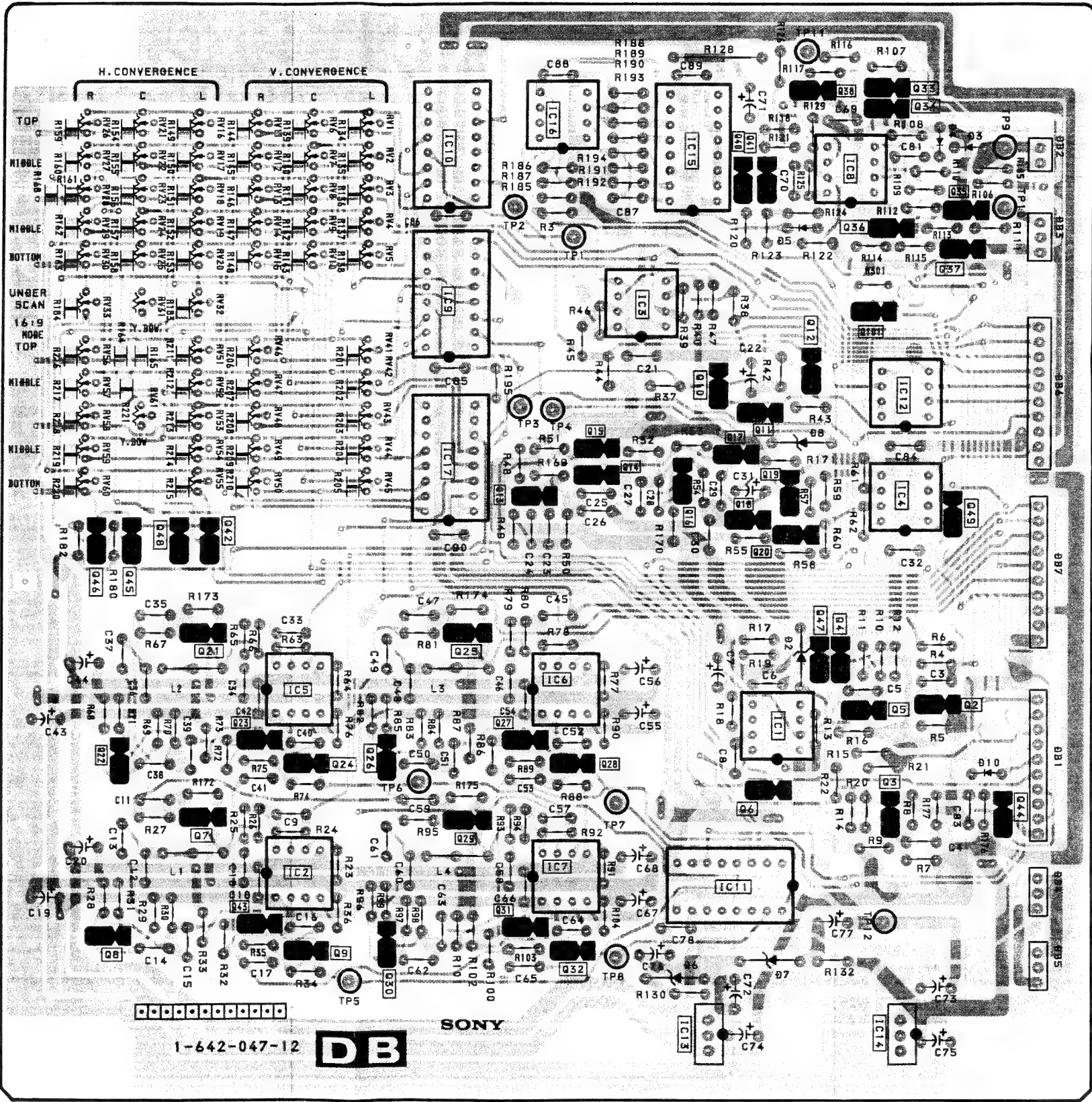
I C	Q	D	TP	ADJ
7	18	4		
8 18 17	17	11		
		3	TP6 RV18	
		13	RV29 RV12 RV11	
14	19	14	RV6 RV17	
5, 6, 9	4, 20		TP8 TP5	
		12		
	21		TP9	
19	5 3		RV32 RV24 RV23	
25 15			TP3 RV7	
10			RV5	
4	22		RV19	
20	1 6		RV31 RV16 RV15	
	7	5		
16			RV4	
13	8			
24	12		RV30 RV14 RV13	
2	23		TP2 RV28	
11, 26		9 10	TP1	
3 21		16 18	TP4	
	9 23		TP7 RV27 RV21	
	11	1 6	RV1 RV20	
	13, 14 15, 16	7	TP10	
1 12 22	24	2	TP11	
	31			
	10		RV2 RV10 RV26	
			RV3 RV22 RV25	



- **Side pattern**: Pattern from the side which enables seeing.
- **Rear pattern**: Pattern of the rear side.

DB board (CONVERGENCE WAVEFORM)

IC	Q	D	TP	ADJ
			11	
16	38 33 34			26 21 16 11 6 1
10 15		4 3	9	27 22 17 12 7 2
8	40 41 35		2 10	28 23 18 13 8 3
	36	5	1	29 24 19 14 9 4
	37			30 25 20 15 10 5
9 3	101			33 31 32
	10 12			56 51 46 41
12	11			57 52 47 42
			3 4	58 61 53 48 43
17	15 17	8		59 54 49 44
4	13 14 16 19			60 55 50 45
	18 20 49 46 45 48 42			
	21 25 47 4	2		
5 6	5 2			
1	23 27			
	22 24 26 28 6	10		
	7 29 3 44		6 7	
2 7				
11	43 31 8 9 30 32	7	12 8	
		6	5	
13 14				

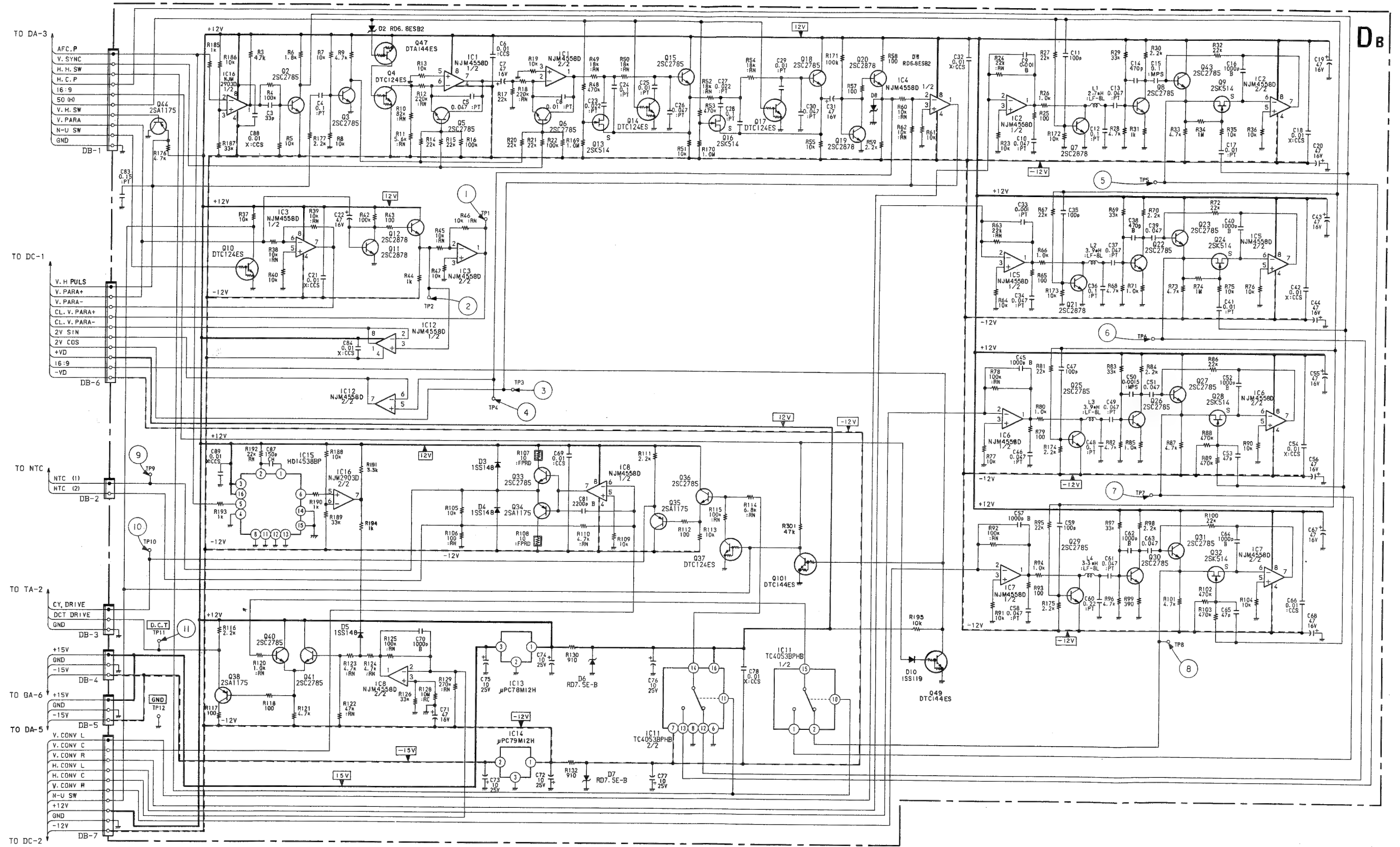


CAD

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



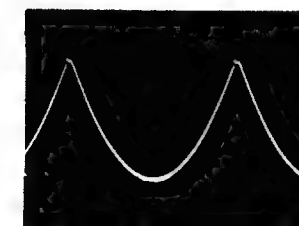
## DB board (CONVERGENCE WAVEFORM)



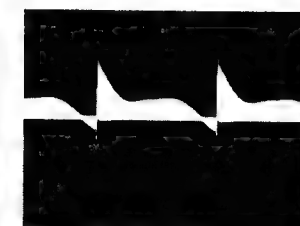
## DB BOARD

IC 1	NJM4558D	2XV GEN
2	NJM4558D	AMP & CLAMP
3	NJM4558D	INVERTER
4	NJM4558D	INVERTER
5	NJM4558D	AMP & CLAMP
6	NJM4558D	AMP & CLAMP
7	NJM4558D	AMP & CLAMP
8	NJM4558D	AMP
11	TC4053BPHB	1/2HV. SW
12	NJM4558D	BUFFER
13	uPC78M12H	+12V REG.
14	uPC79M12H	-12V REG.
15	HD14538BP	H.CONV CLAMP
16	NJM2903D	INVERTER
Q 2	2SC2785	H. SW
3	2SC2785	2XV. PULSE GEN
4	DTC124ES	50/60 SW
5	2SC2785	2XV SW
6	2SC2785	2XV SW
7	2SC2878	H. SW
8	2SC2785	AMP
9	2SK514	H. CLAMP
10	DTC124ES	N/U SW
11	2SC2878	CLAMP
12	2SC2878	BUFFER
13	2SK514	50/60 SW
14	DTC124ES	50/60 SW
15	2SC2785	50/60 SW
16	2SK514	50/60 SW
17	DTC124ES	50/60 SW
18	2SC2785	BUFFER
19	2SC2878	CLAMP

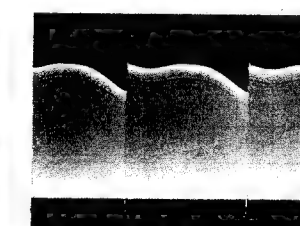
Q 20	2SC2878	BUFFER
21	2SC2878	H. SW
22	2SC2785	AMP
23	2SC2785	H. CLAMP
24	2SK514	H. CLAMP
25	2SC2785	H. SW
26	2SC2785	AMP
27	2SC2785	H. CLAMP
28	2SK514	H. CLAMP
29	2SC2785	H. SW
30	2SC2785	AMP
31	2SC2785	H. CLAMP
32	2SK514	H. CLAMP
33	2SC2785	N.T.C AMP
34	2SA1175	N.T.C AMP
35	2SA1175	BUFFER
36	2SC2785	BUFFER
37	DTC124ES	N/U SW
38	2SA1175	BUFFER
40	2SC2785	ADDER
41	2SC2785	ADDER
43	2SC2785	H. CLAMP
44	2SA1175	BUFFER
47	DTA144ES	16:9 SW
49	DTA144ES	INVERTER
101	DTA144ES	N/U SW
D 2	RD6.8ESB2	LEVEL SHIFT
3	1SS148	PROTECTOR
4	1SS148	PROTECTOR
5	1SS148	DC STOPPER
6	RD7.5E-B3TN	+7.5V REG.
7	RD7.5E-B3TN	-7.5V REG.
8	RD6.8ESB2	LIMITER
10	1SS148	DC STOPPER



① 5.8Vp-p (V)



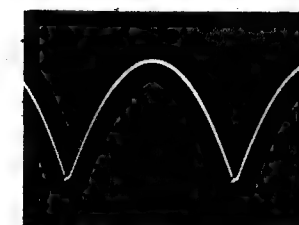
⑤ 1.5Vp-p (V)



⑧ 1.8Vp-p (V)



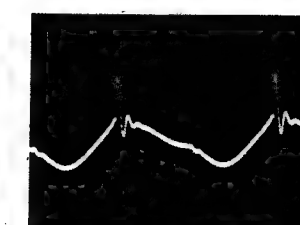
⑪ 4.8Vp-p (H)



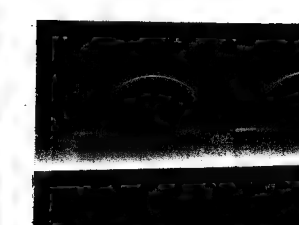
② 5.8Vp-p (V)



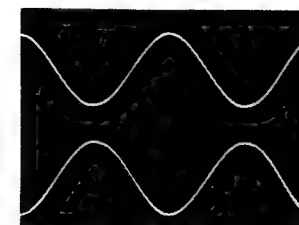
⑥ 1.5Vp-p (V)



⑨ 1Vp-p (V)



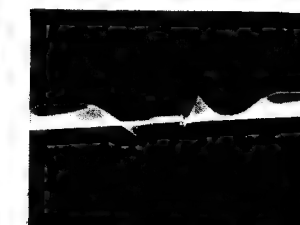
⑫ 4.8Vp-p (V)



③ 2.0Vp-p (V)



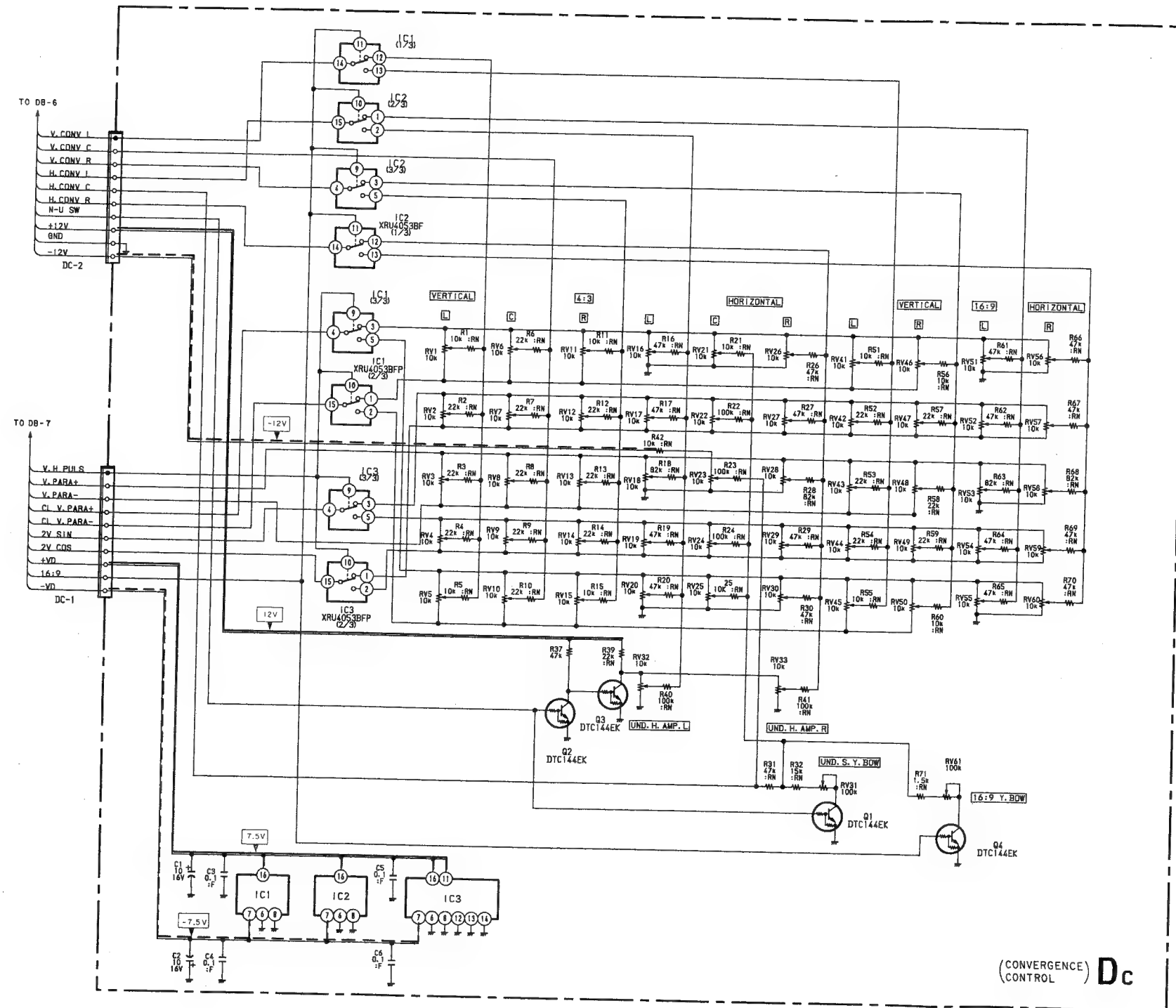
⑦ 1.8Vp-p (V)

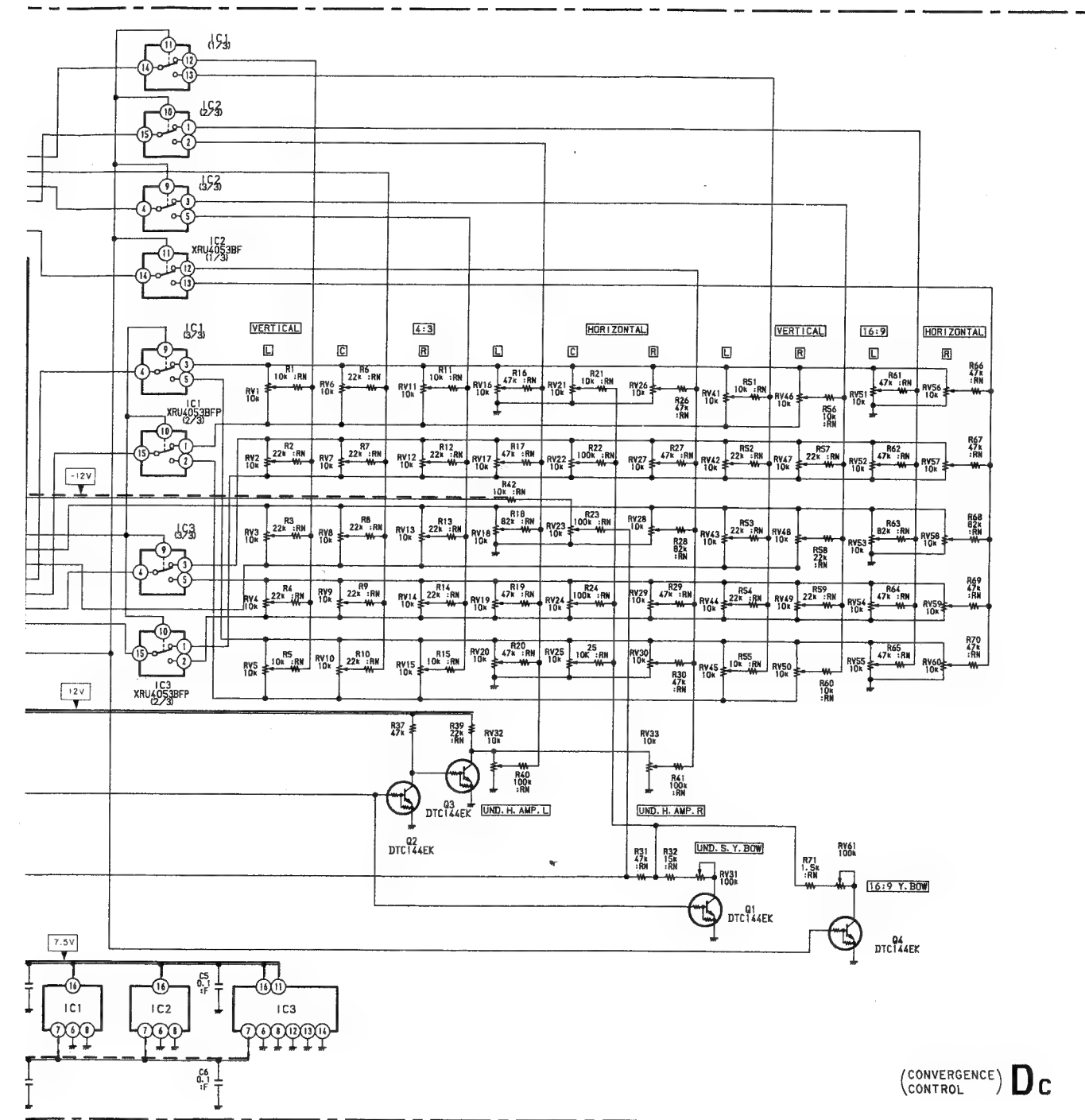


⑩ 1.5Vp-p (V)

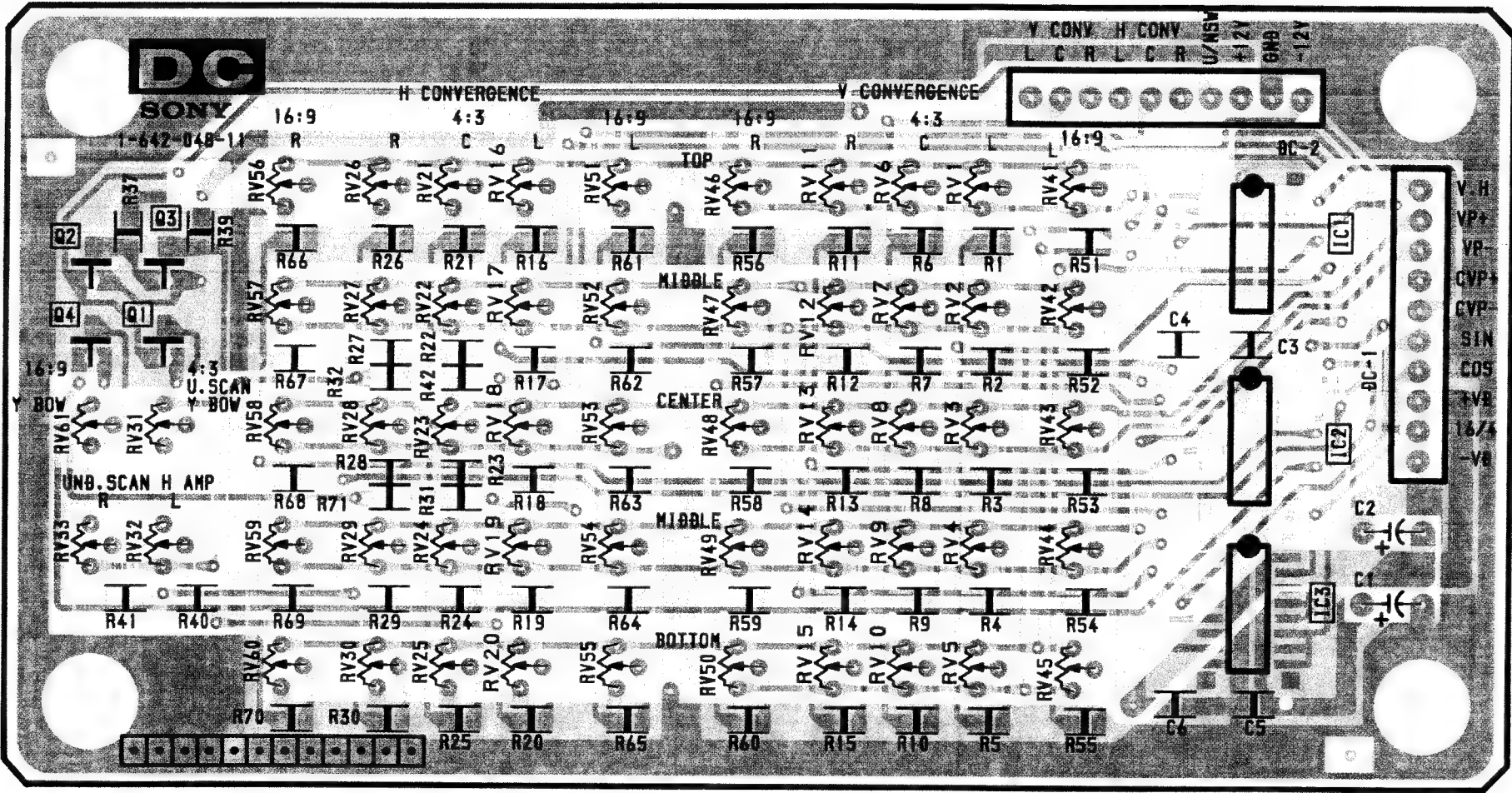
## DC board (CONVERGENCE CONTROL)

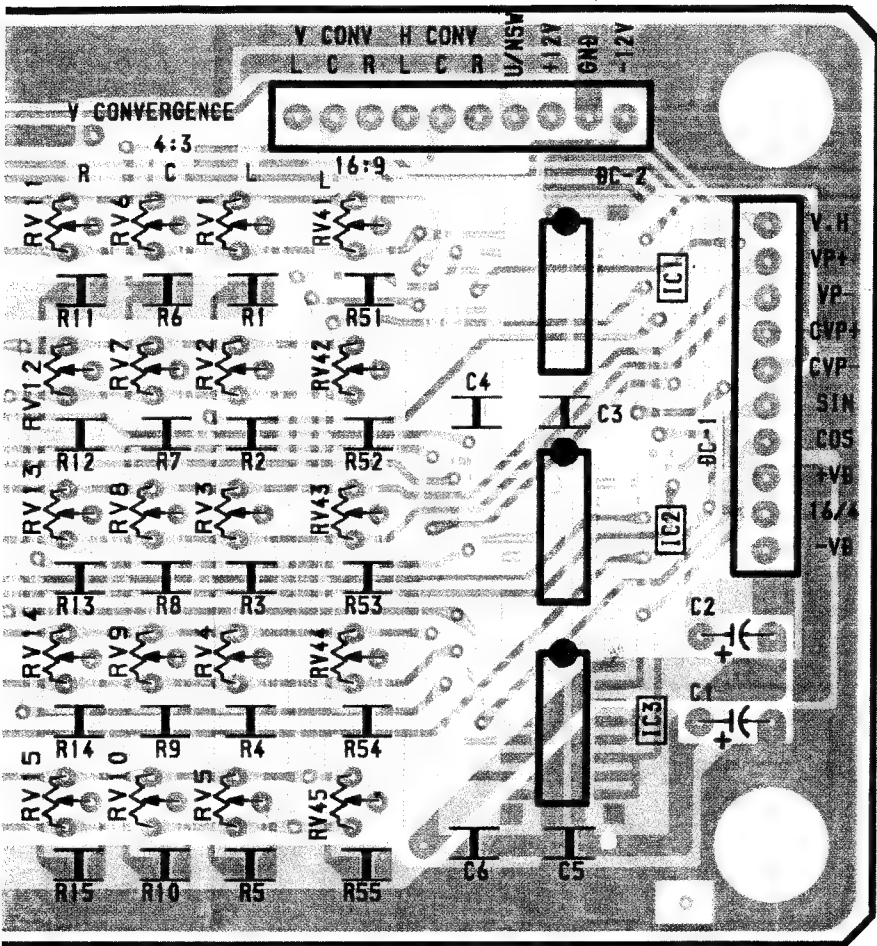
IC 1	XRU4053BF	1/2 HV. SW
2	XRU4053BF	1/2 HV. SW
3	XRU4053BF	
Q1	DTC144EK	UND. Y BOW
2	DTC144EK	UND. H. AMP
3	DTC144EK	UND. H. AMP
4	DTC144EK	





DC board (CONVERGENCE CONTROL)



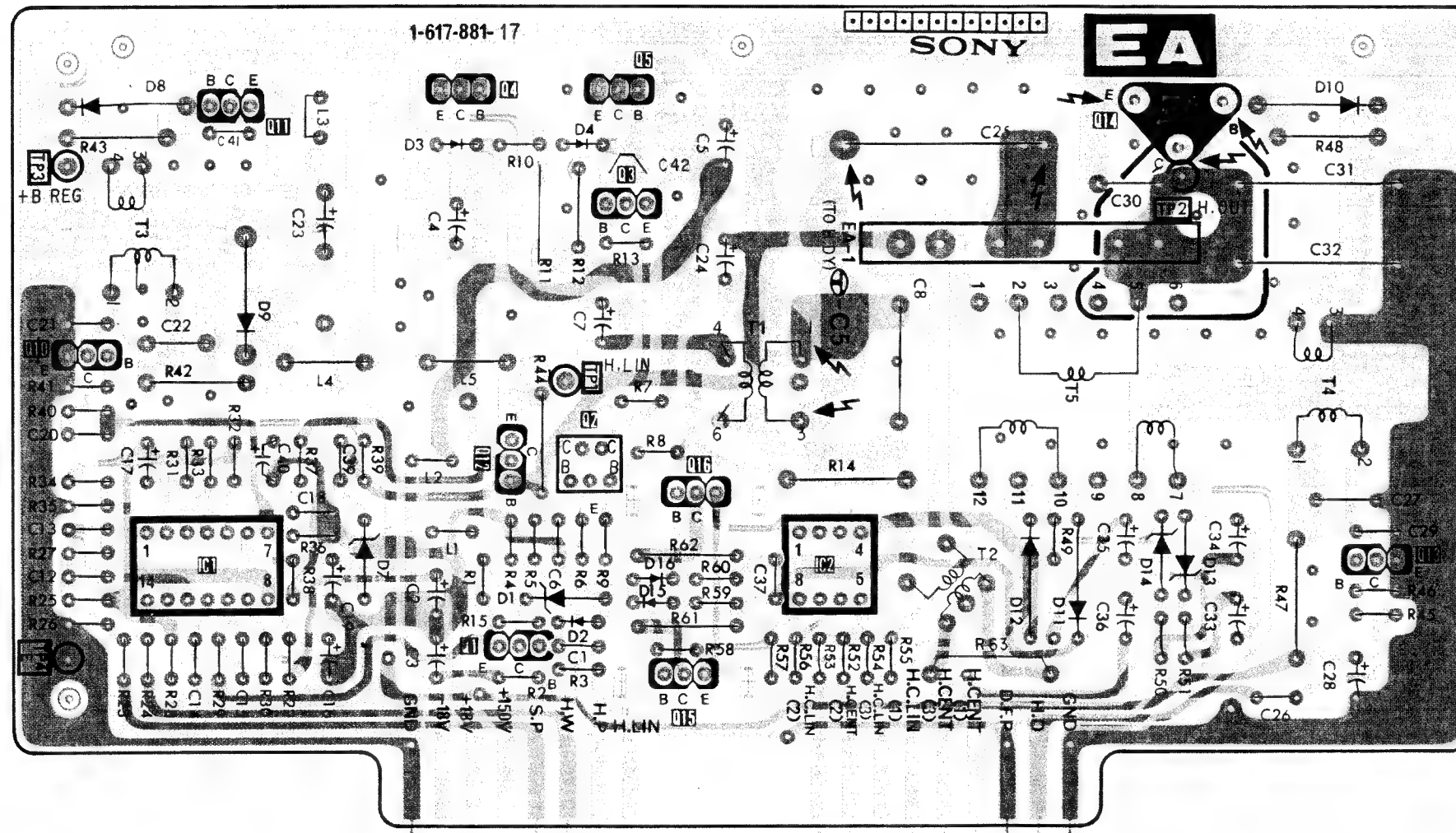


- [Pattern from the side which enables seeing.
- [Pattern of the rear side.



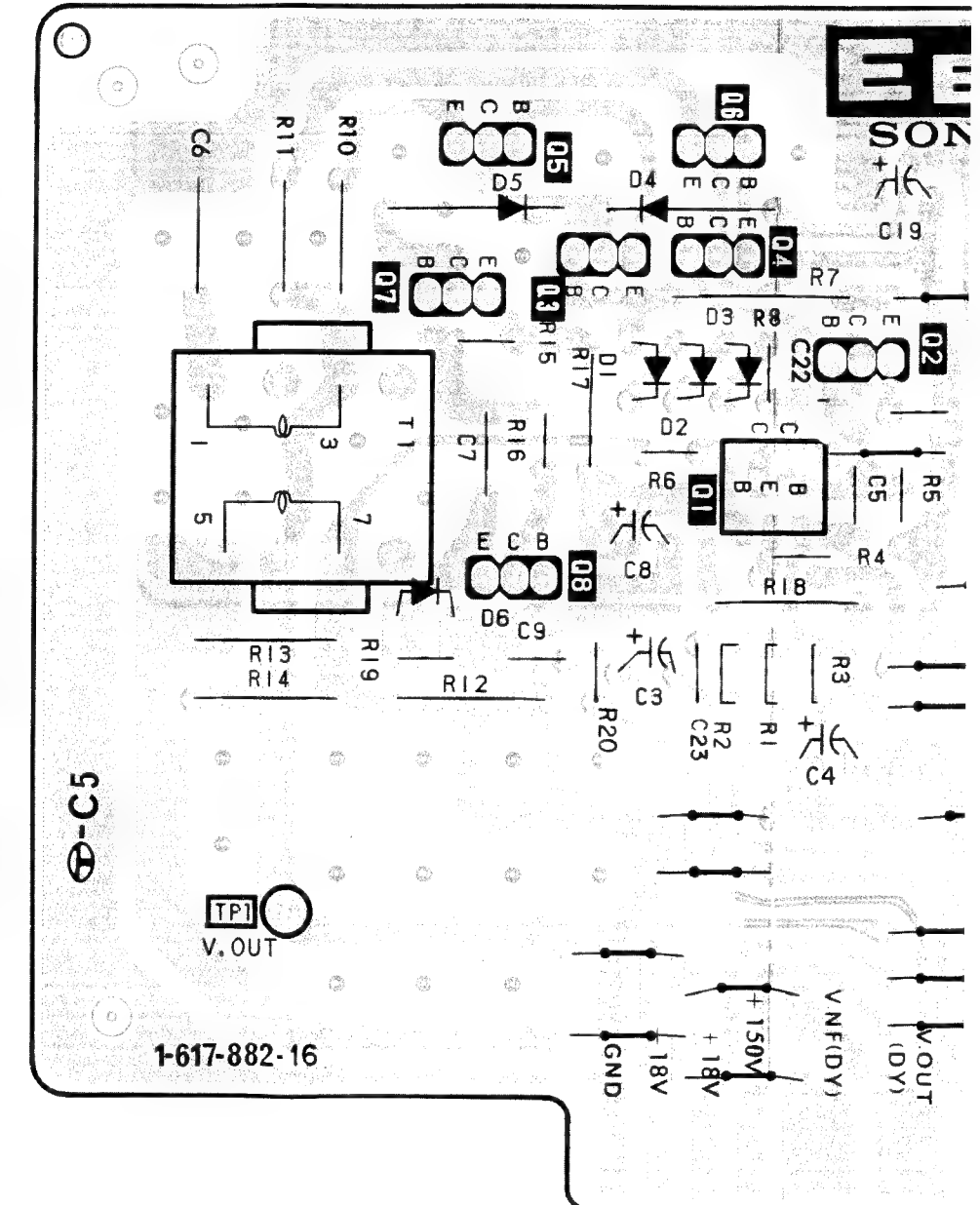
EA board (H OUT)

IC	1										2																																																																																																																																	
Q	11										4										5										3										14										13																																																																																									
D	8										9										7										3										4										1										2										16										15										12										11										14										13										10									
TP	TP 3										TP 4										TP 1										TP 2																																																																																																													



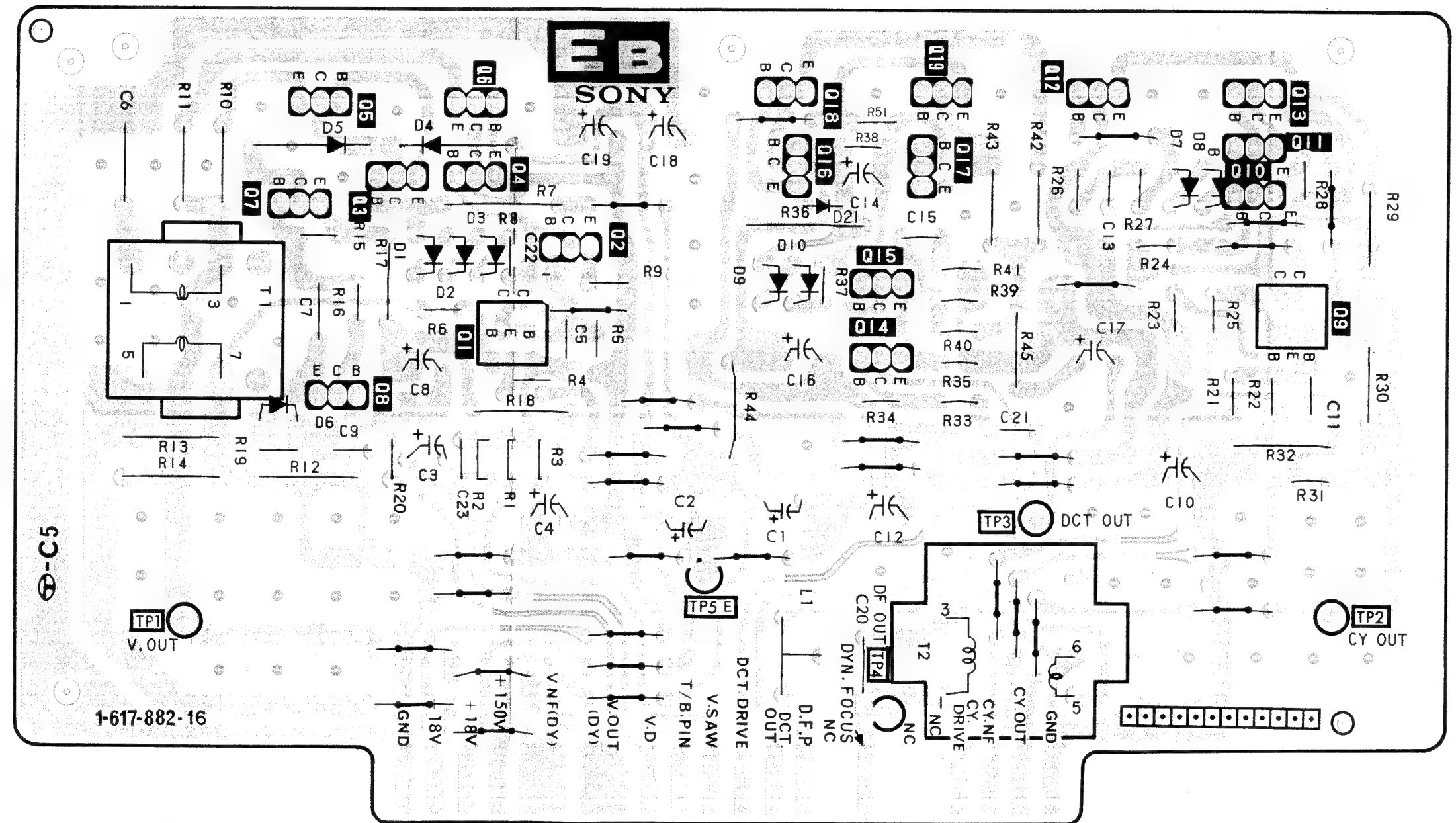
EB board (V OUT)

Q	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">7</div> <div style="text-align: center;">5 8</div> <div style="text-align: center;">3</div> <div style="text-align: center;">6 4</div> <div style="text-align: center;">1</div> <div style="text-align: center;">2</div> </div>
D	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">6</div> <div style="text-align: center;">5</div> <div style="text-align: center;">4 1</div> <div style="text-align: center;">2</div> <div style="text-align: center;">3</div> </div>
TP	TPI



EB board (V OUT)

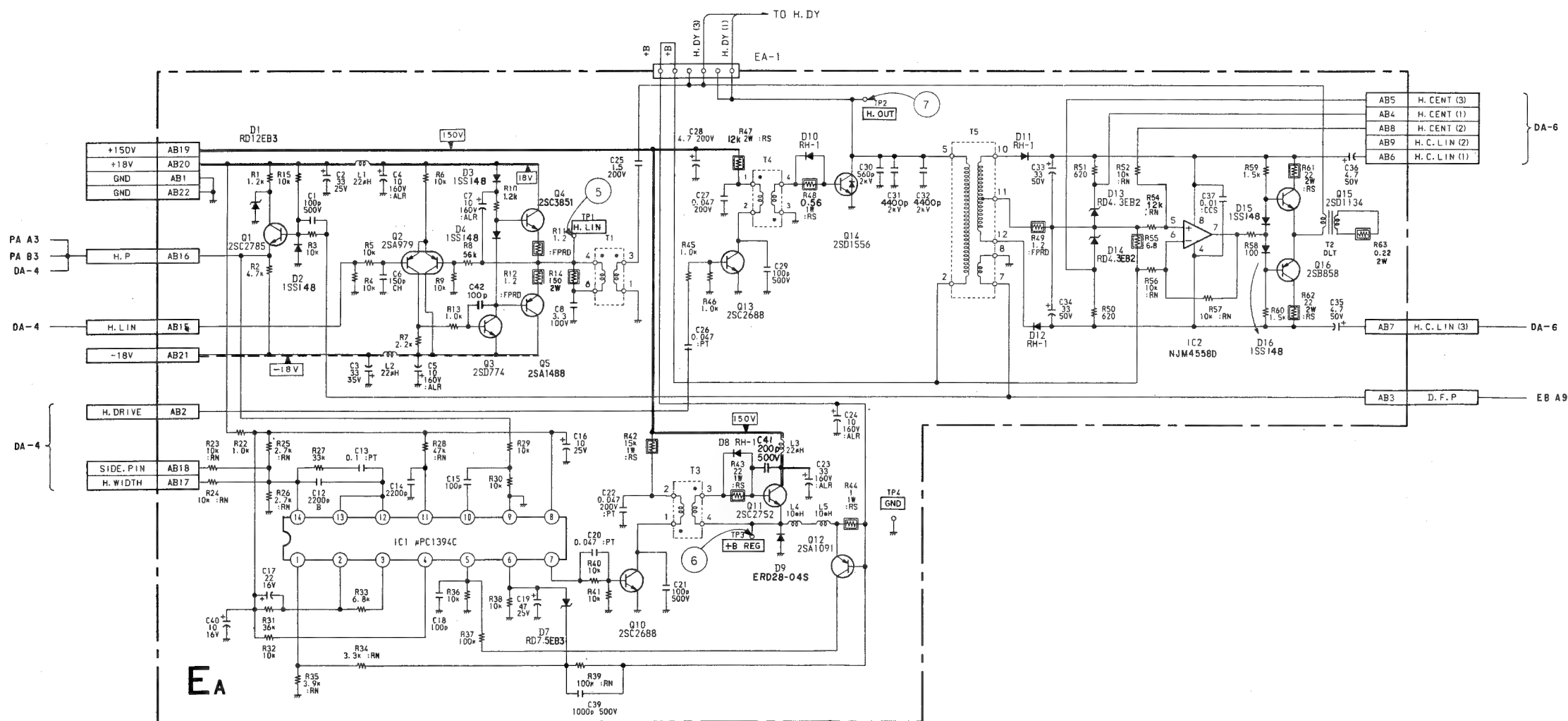
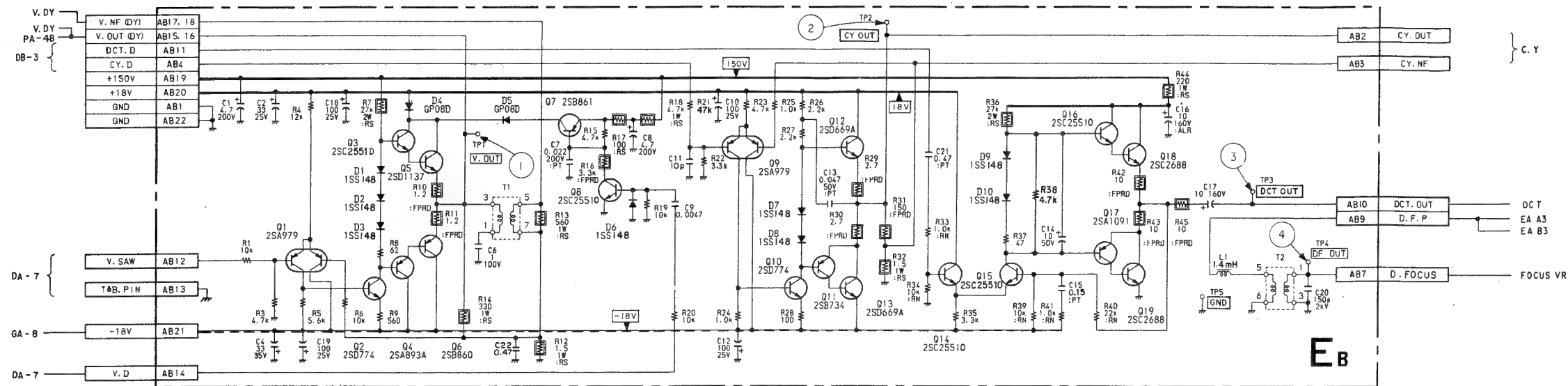
Q		5	3	6		18	19	12	13	
	7	8		4	2	16	17		11	
D			5	4					7	8
		6		1	2	9	10	21		
TP						TP5	TP4	TP3		TP2

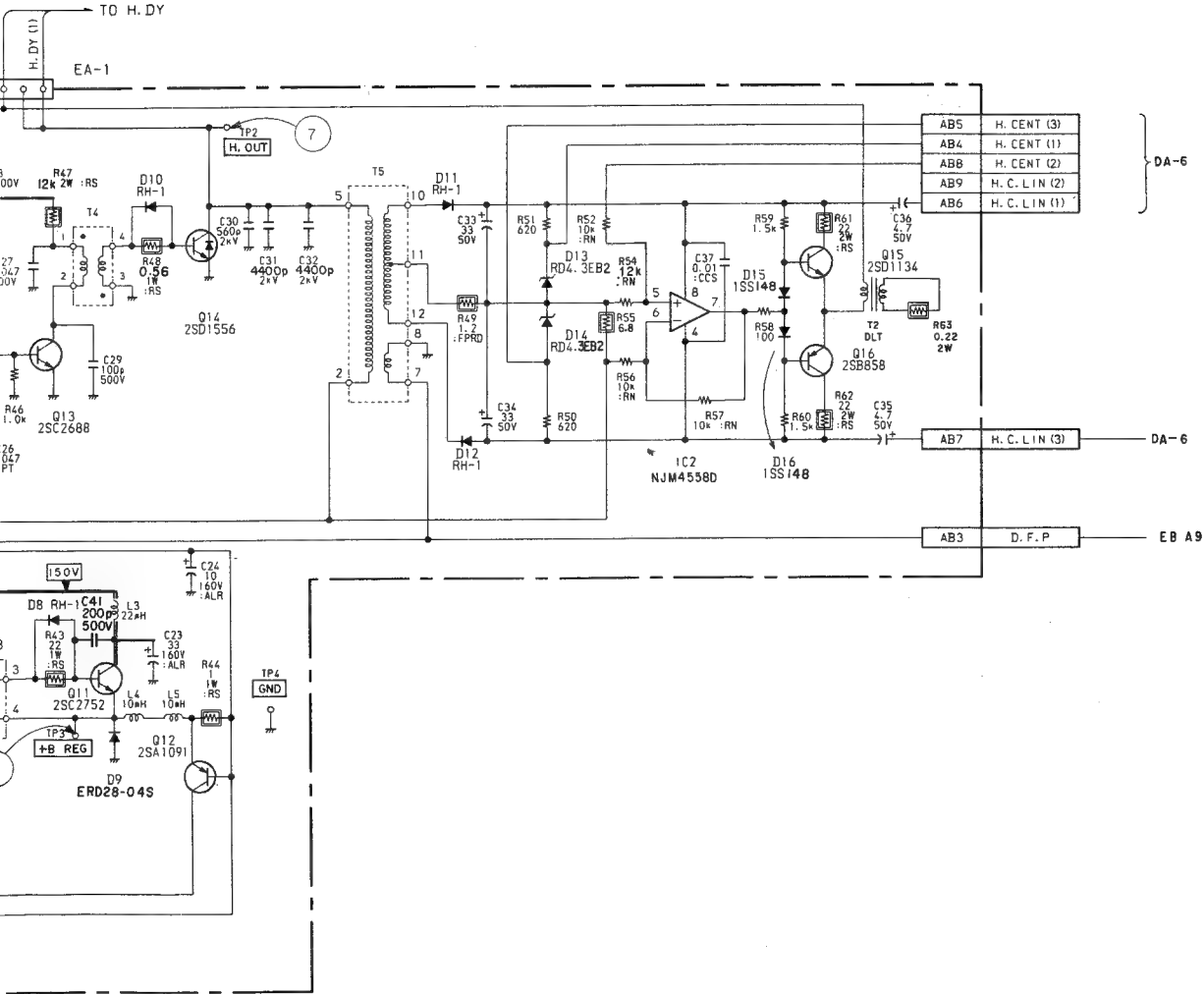
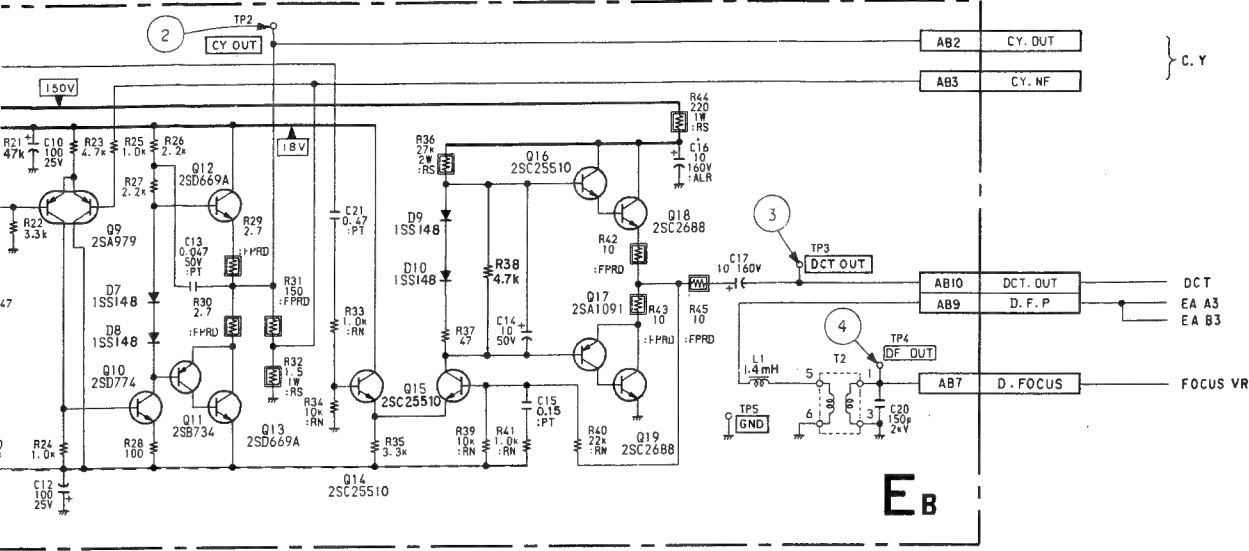


- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



EA board (H OUT)  
EB board (V OUT)



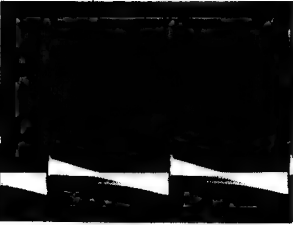


EA BOARD

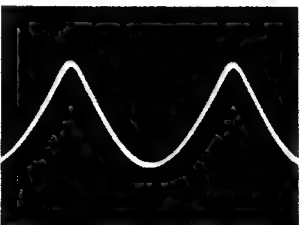
IC1	uPC1394C	P.W.M CONTROL
2	NJM4558D	H.CENT
Q1	2SC2785	H.PULSE BUFFER
2	2SA979	H.LIN AMP
3	2SD774	H.LIN AMP
4	2SC3851	H.LIN AMP OUT
5	2SA1488	H.LIN AMP OUT
10	2SC2688	P.W.M DRIVE
11	2SC2752	P.W.M OUT
12	2SA1091	O.C.P
13	2SC2688	H.DRIVE
14	2SD1556	H.OUT
15	2SD1134	H.CENT
16	2SB858	H.CENT
D1	RD12E-B3	CLIPPER
2	1SS148	PROTECTOR
3	1SS148	BIAS
4	1SS148	BIAS
7	RD7.5E-B3	PROTECTOR
8	RH-1	P.W.M DRIVE
9	ERD28-04S	P.W.M SW
10	RH-1	H.DRIVE
11	RH-1	H.P.RECT.
12	RH-1	H.P.RECT.
13	RD4.3E-B2	+4.3V REG
14	RD4.3E-B2	-4.3V REG
15	1SS148	BIAS
16	1SS148	BIAS

EB BOARD

Q1	2SA979	V.AMP
2	2SC3209	V.AMP
3	2SC25510	V.AMP
4	2SA1091	V.AMP
5	2SC2983	V.AMP OUT
6	2SA1306B	V.AMP OUT
7	2SB861	V.RETRACE SW
8	2SC25510	V.RETRACE SW
9	2SA979	CY.AMP
10	2SD774	CY.AMP
11	2SB734	CY.AMP
12	2SD669A	CY.AMP OUT
13	2SD669A	CY.AMP OUT
14	2SC25510	D.C.T AMP
15	2SC25510	D.C.T AMP
16	2SC25510	D.C.T AMP
17	2SA1091	D.C.T AMP
18	2SC2688	D.C.T AMP OUT
19	2SC2688	D.C.T AMP OUT
D1	1SS148	BIAS
2	1SS148	BIAS
3	1SS148	BIAS
4	GP08D	DC.STOPPER
5	GP08D	DC.STOPPER
6	1SS148	PROTECTOR
7	1SS148	BIAS
8	1SS148	BIAS
9	1SS148	BIAS
10	1SS148	BIAS
21	1SS148	PROTECTOR



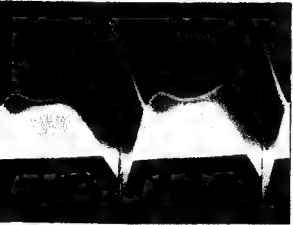
① 90Vp-p (V)



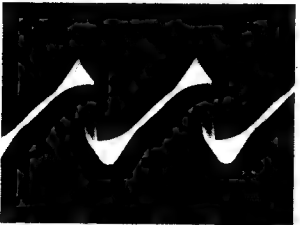
④ 840Vp-p (H)



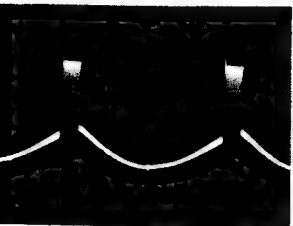
⑦ 920Vp-p (H)



② 0.3Ap-p (V)



⑤ 30Vp-p (H)



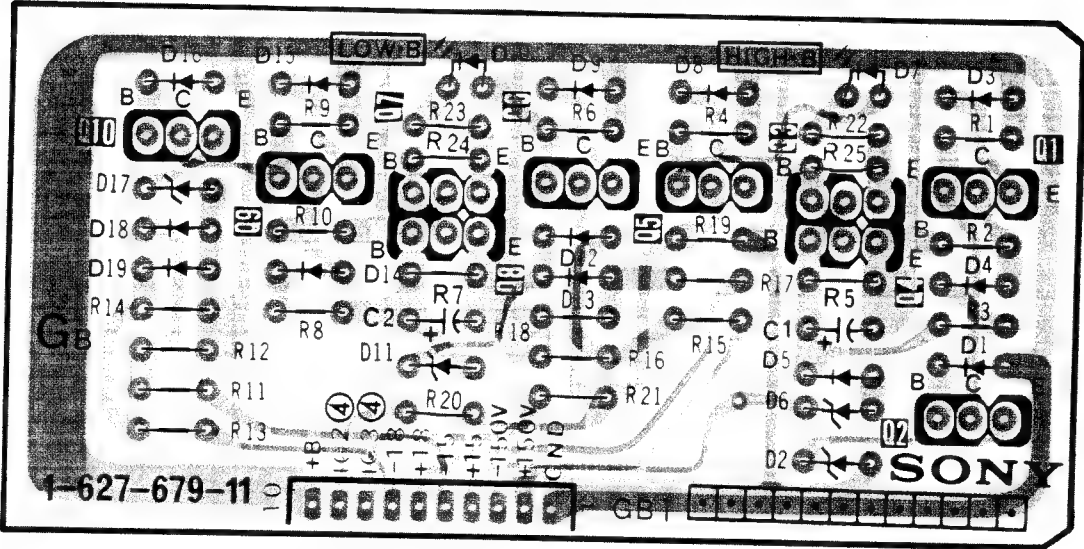
③ 100Vp-p (H)



⑥ 150Vp-p (H)

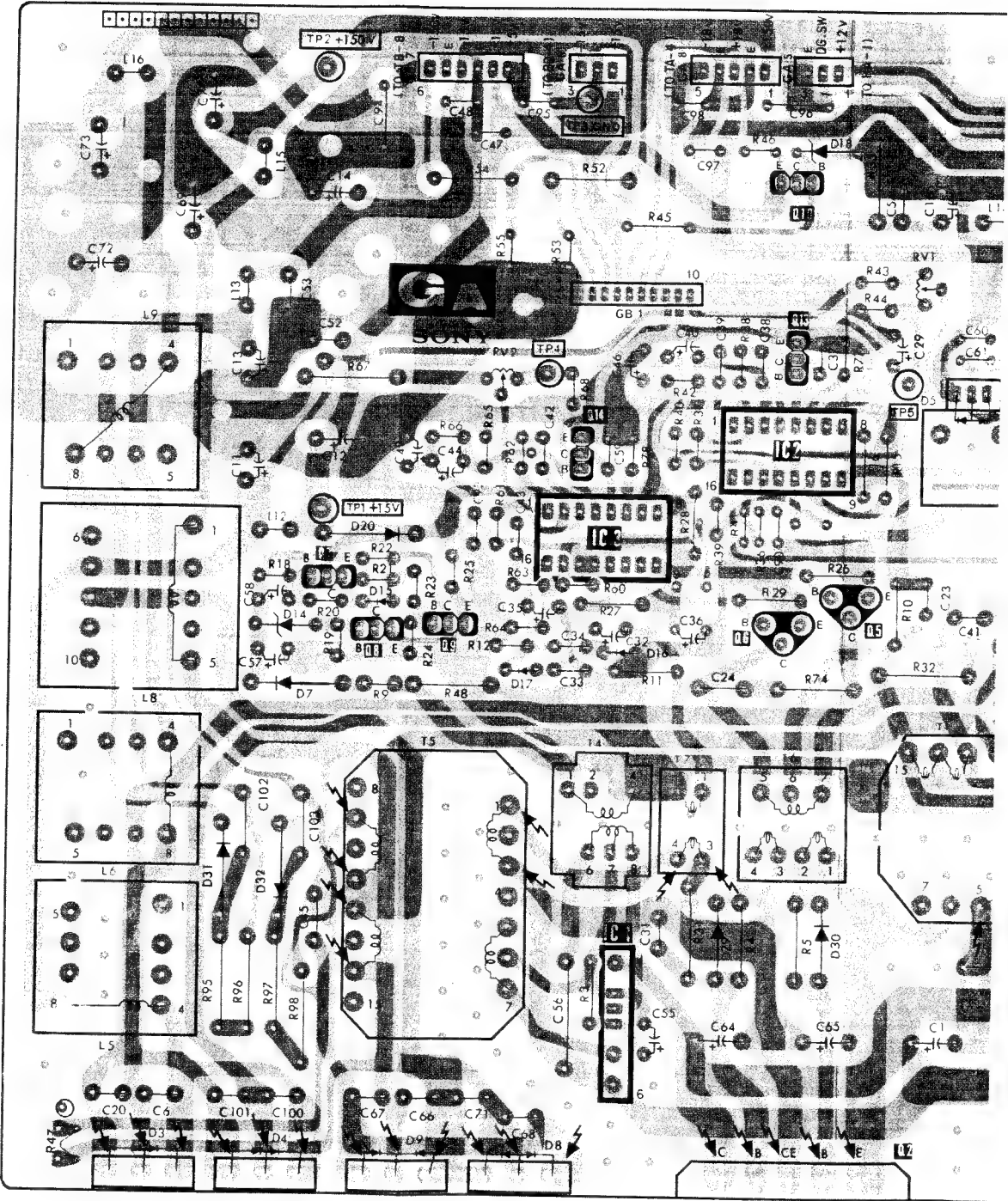
S. DIAGRAMS

GB board (OVER VOLTAGE PROTECTOR)



GA board (AC RECT, DC REG)

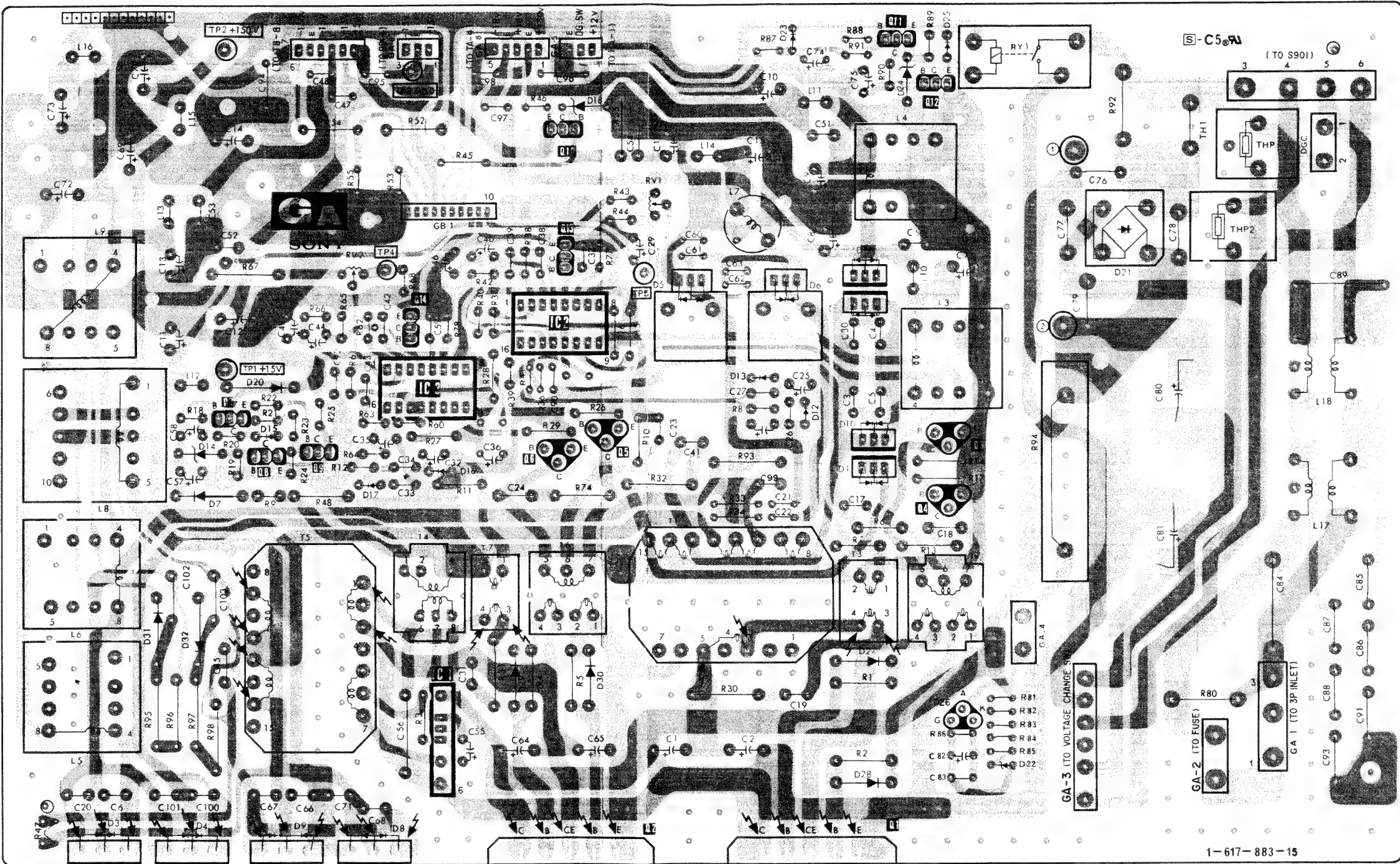
IC	Q	D	ADJ-TP
		23 25	TP2
	11		TP3
	12	18	
	10		
			RV1
		21	
	13	11	RV2 TP4
		5 6	TP5
2	14	2	
3			TP1
		20 13	
	7	12	
	5	15	
	6	10	
	3	14	
		16	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
		22	
		28	
		3	
		4	
		9	
		8	
	2	1	





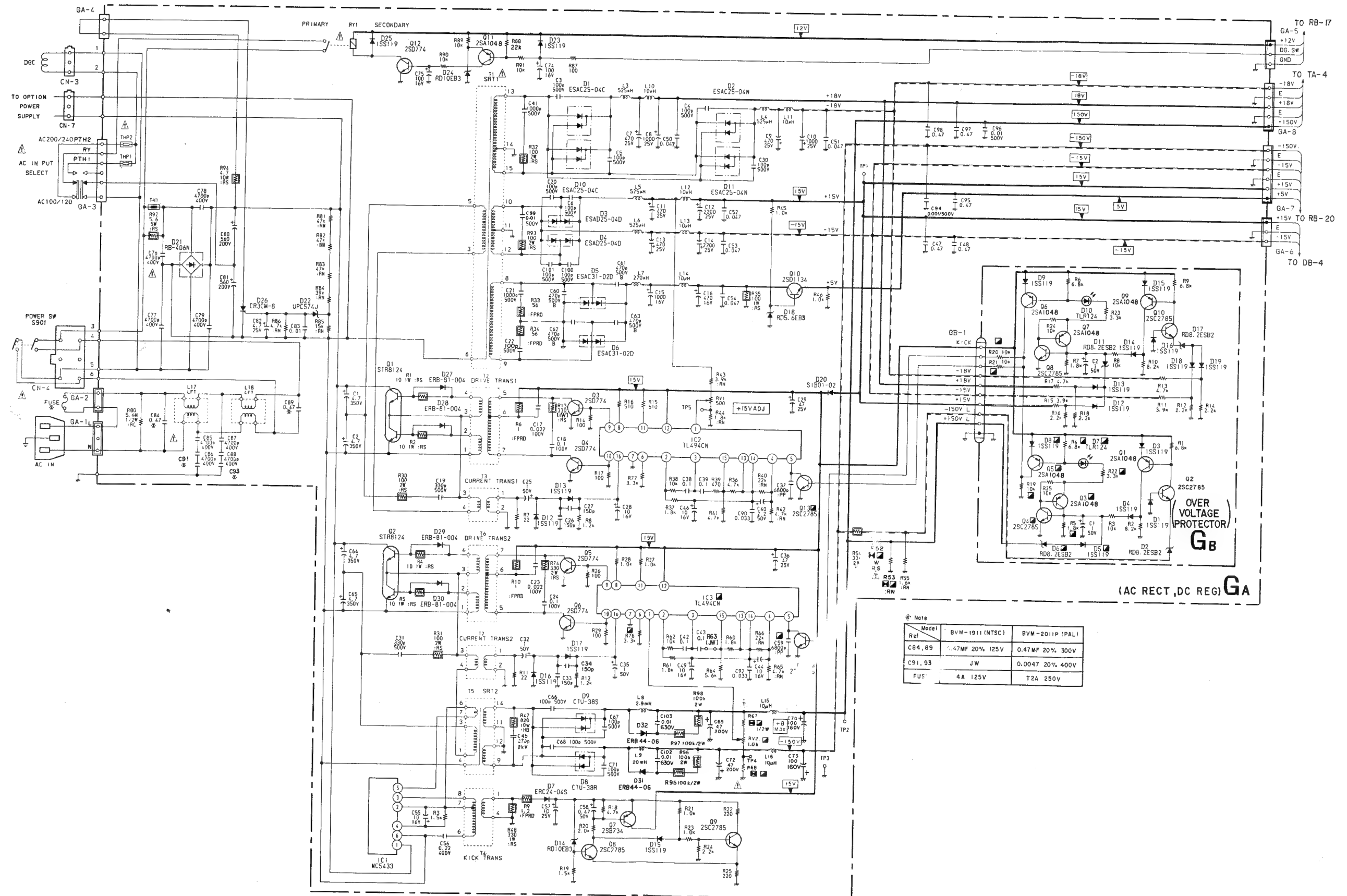
GA board (AC RECT, DC REG)

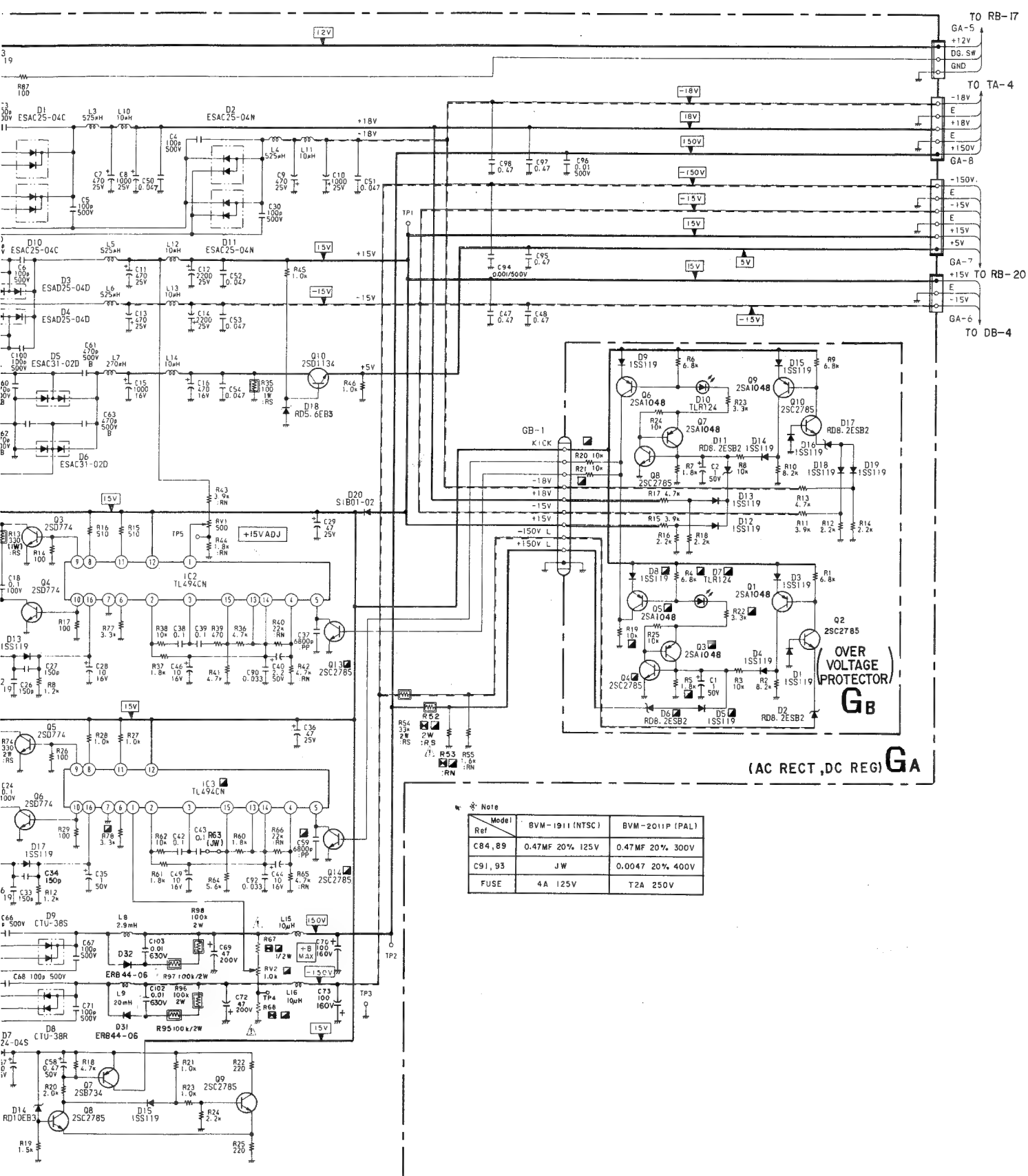
IC	Q	D	ADJ-TP
		23 25	TP2
	11	24	TP3
	12	18	
	10		
			RV1
		21	
	13	11	RV2 TP4
		5 6	TP5
		2	
2	14		
3			TP1
		20	
	7	12	
	5	15	
	9 6 3	10	
	8	14	
		16	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
		22	
		28	
		3	
		4	
		9 8	
	2 1		



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

GA board (AC RECT, DC REG)  
GB board (OVER VOLTAGE PROTECTOR)





Note

Model	BVM-1911 (NTSC)	BVM-2011P (PAL)
Ref		
C84, 89	0.47MF 20% 125V	0.47MF 20% 300V
C91, 93	JW	0.0047 20% 400V
FUSE	4A 125V	T2A 250V

GA BOARD

IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
10	2SD1134	+5V REG.
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	ESAC31-02D	+5V RECT
6	ESAC31-02D	-5V RECT
7	ERC24-045	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
18	RD5.6E-B3TN	+5V REG
19	1SS119	
20	SIB01-02	DC. STOPPER
21	RB406N	AC RECT
22	uPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

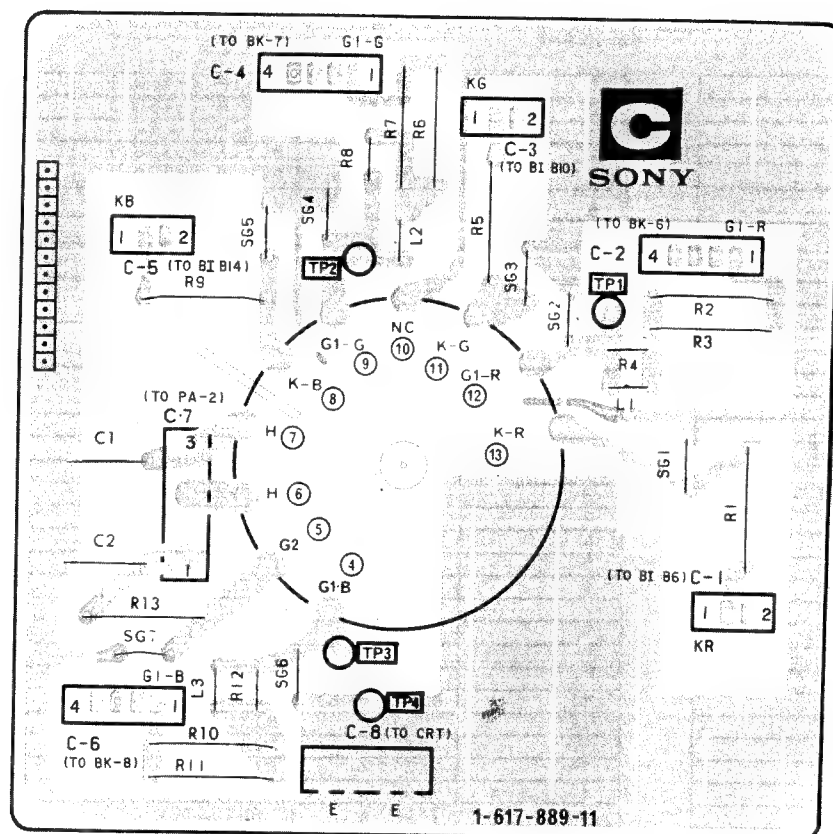
GB BOARD

Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P (+15V)
7	2SA1048	O.V.P (+15V)
8	2SC2785	O.V.P (+18V)
9	2SA1048	O.V.P (-15V)
10	2SC2785	O.V.P (-18V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

5. DIAGRAMS



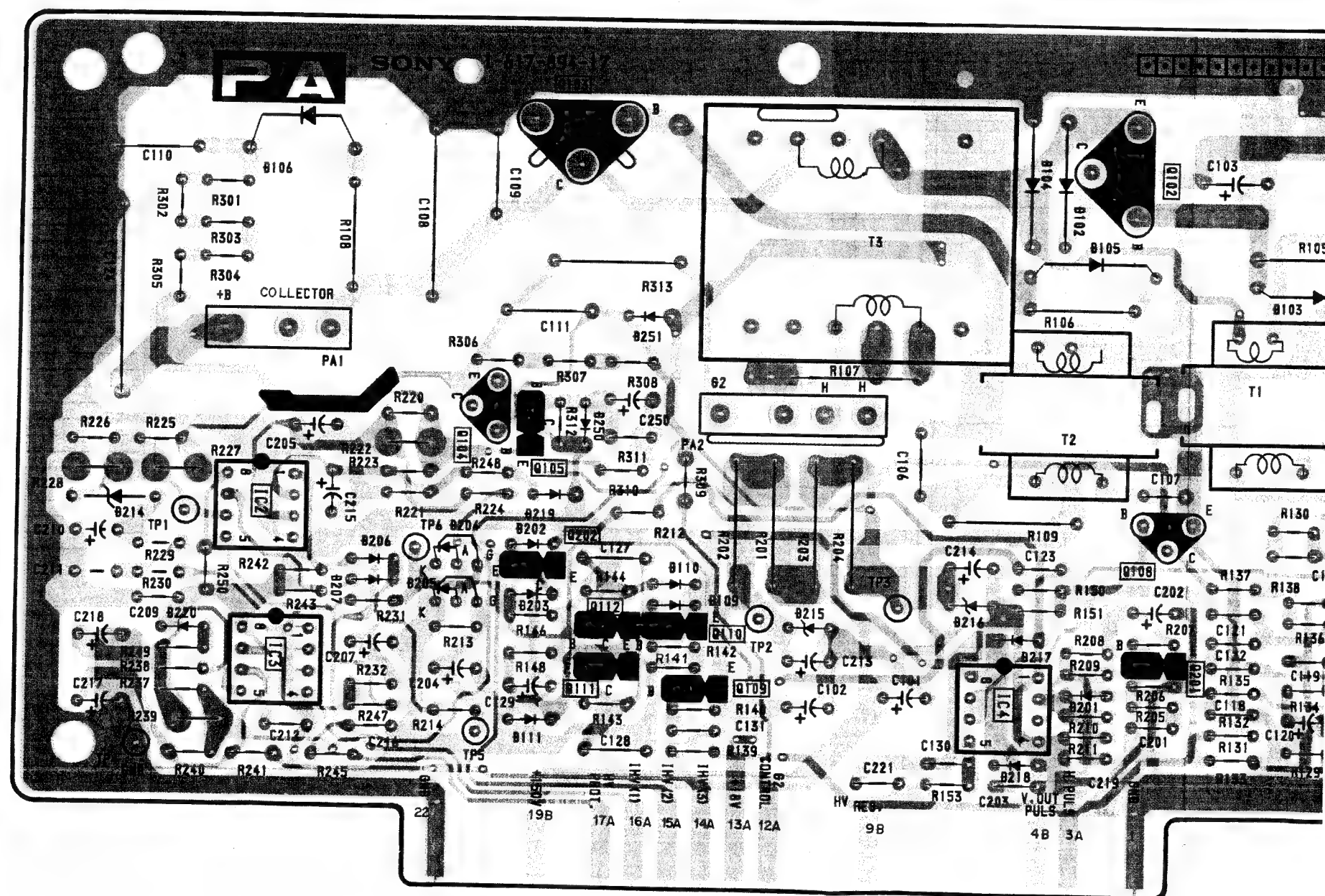
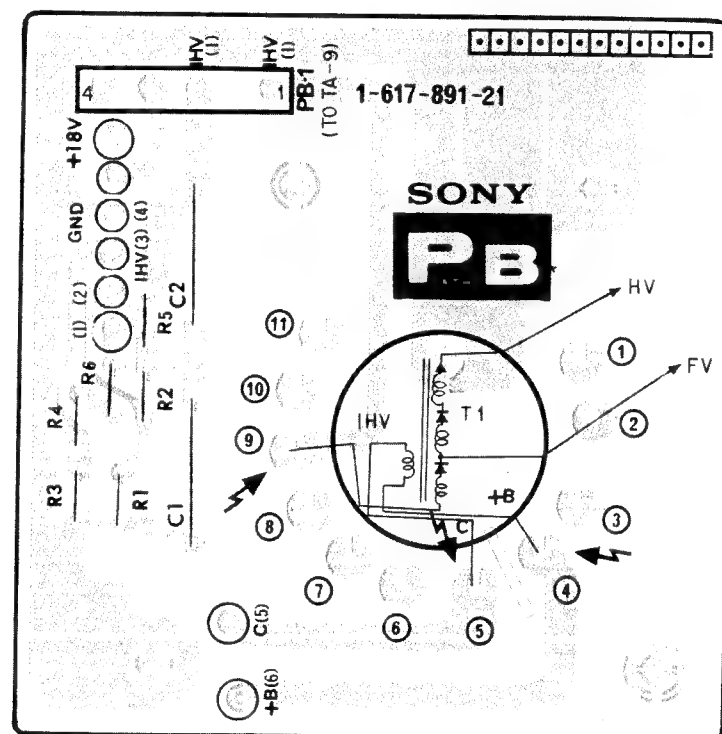
C board (CRT SOCKET)



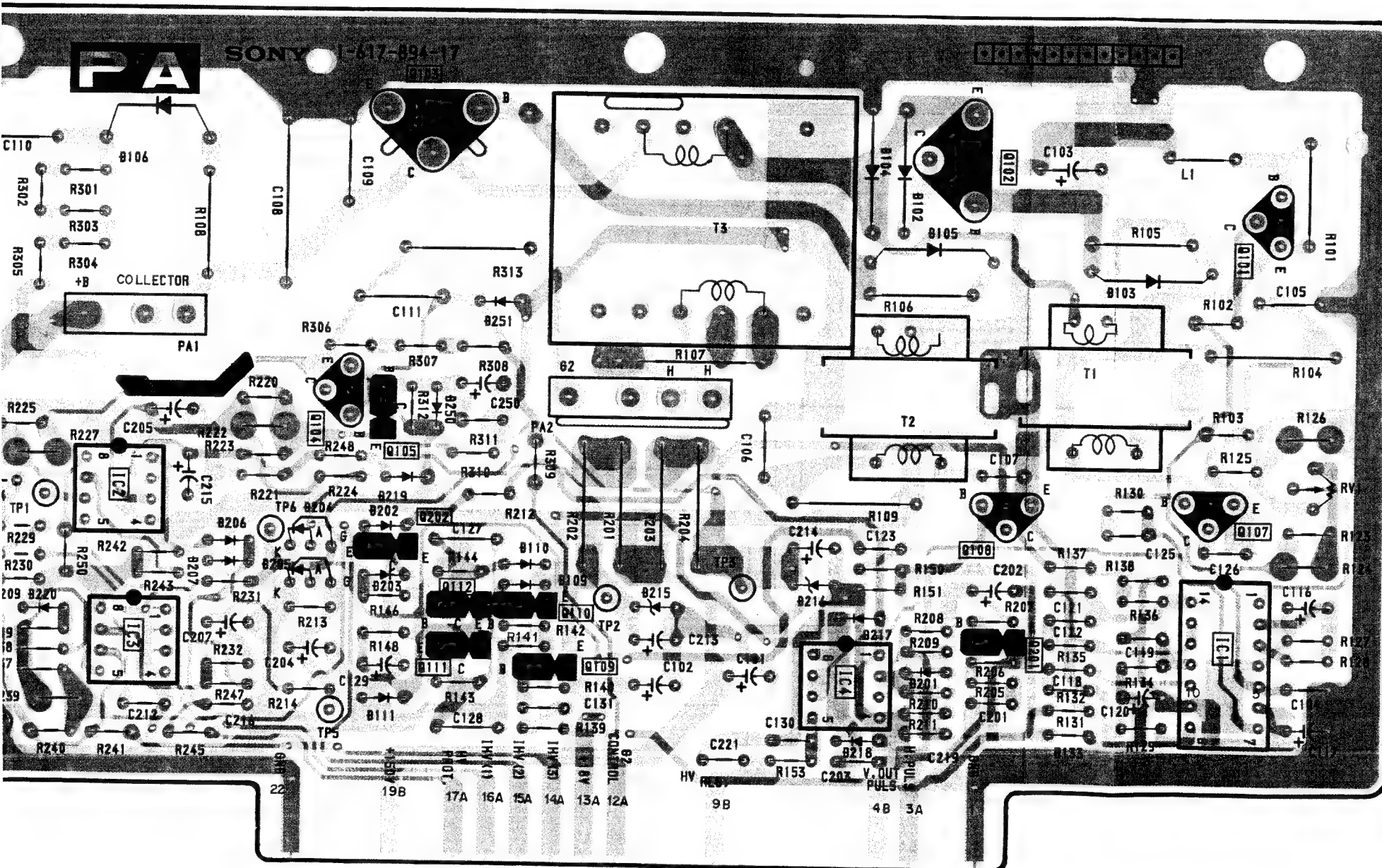
PA board (HIGH VOLTAGE PROTECTOR)

IC	2	3	4	103	102	108	101	103
Q	104	105	112	110	109	104	102	105
D	220	206	204	202	219	250	251	215
TP	4	1	6	5	2	3	216	217
RV							218	201

PB board (FBT)




DETECTOR)

[illegible]

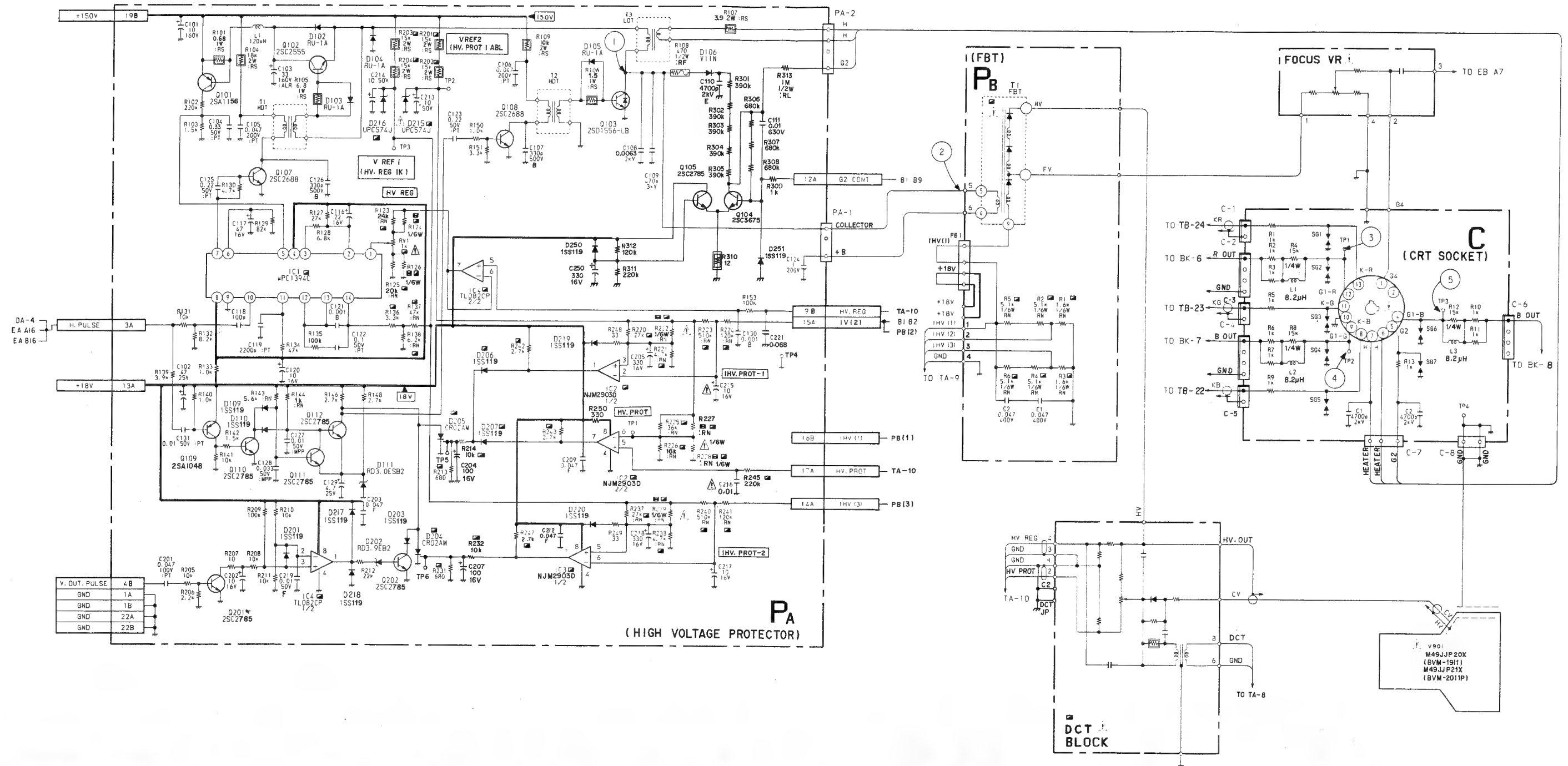
PA BOARD

IC1	UPC1394C	P.W.M CONTROL
2	NJM2903D	COMPARATOR
3	NJM2903D	COMPARATOR
4	TL082CP	BUFFER & COMPARTOR
Q101	2SA1142	O.V.P
102	2SC2555	DC-DC CONV.
103	2SD1556	HV CONV.
104	2SC3675	G2 REGULATOR
105	2SC3675	G2 REGULATOR
107	2SC2688	DC-DC CONV. DRIVE
108	2SC2688	HV CONV. DRIVE
109	2SA1175	HV CONV. DRIVE
110	2SC2785	HV CONV. DRIVE
111	2SC2785	HV CONV. DRIVE
112	2SC2785	HV CONV. DRIVE
201	2SC2785	CRT PROTECTOR
202	2SC2785	CRT PROTECTOR
D102	RU-1A	DC-DC CONV.
103	RU-1A	DC-DC CONV.
104	RU-1A	DC-DC CONV.
105	RU-1A	HV CONV. DRIVE
106	V11N	RECTIFIER
107	RD6.2EB2	G2 CONTROL
109	1SS119	HV CONV. DRIVE
110	1SS119	HV CONV. DRIVE
111	RD3.0ESB2	HV CONV. DRIVE
201	1SS119	PROTECTOR
202	RD3.9EB2	CRT PROTECTOR
203	1SS148	CRT PROTECTOR
204	CRO2AM	PROTECTOR
205	CRO2AM	PROTECTOR
206	1SS119	MIX
207	1SS119	MIX
214	HZ1A2L	HV. PROT
215	uPC574J	HV PROT. REF.
216	uPC574J	HV PROT. REF.
217	1SS119	PROT
218	1SS119	PROT
219	1SS119	PROT
220	1SS119	PROT
250		
251		

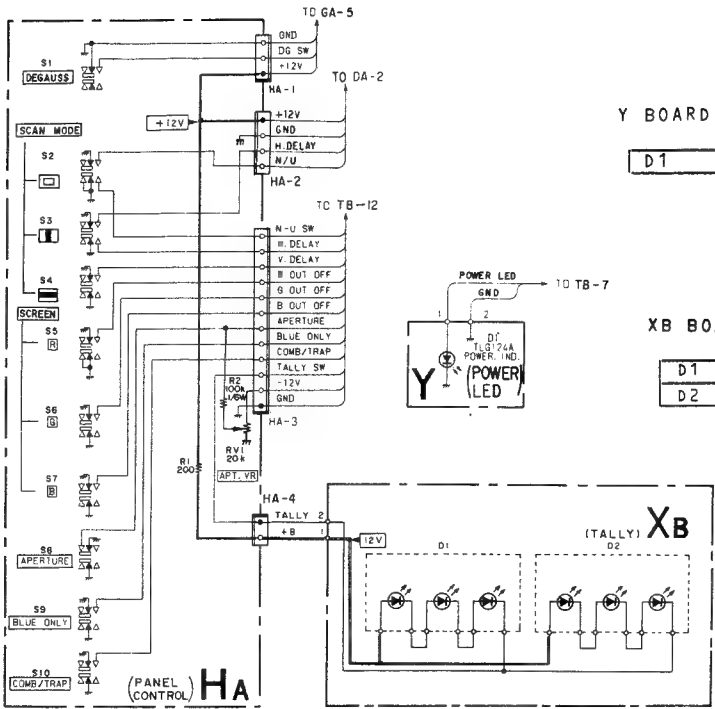
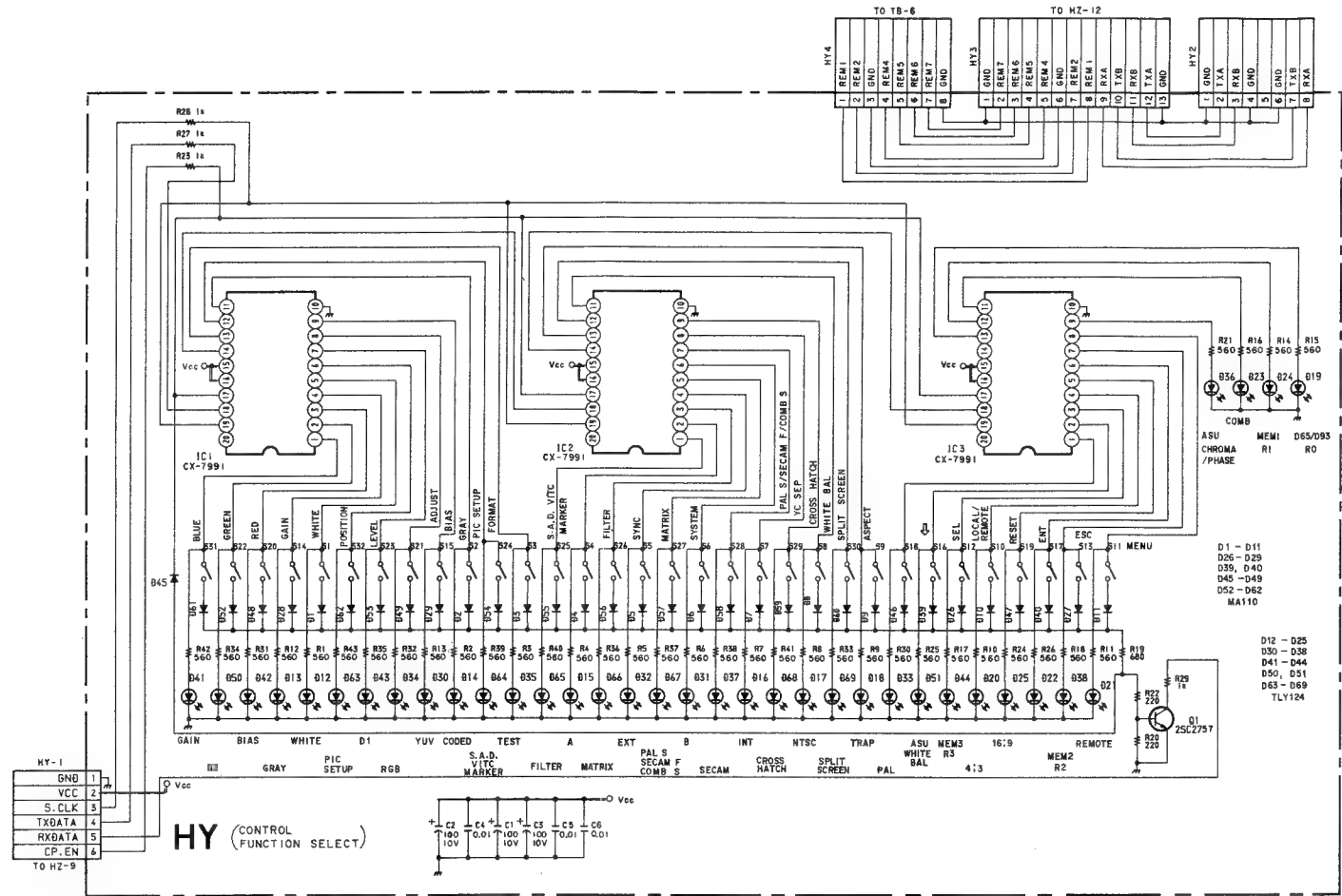
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.



C board (CRT SOCKET)  
PA board (HIGH VOLTAGE PROTECTOR)  
PB board (FBT)

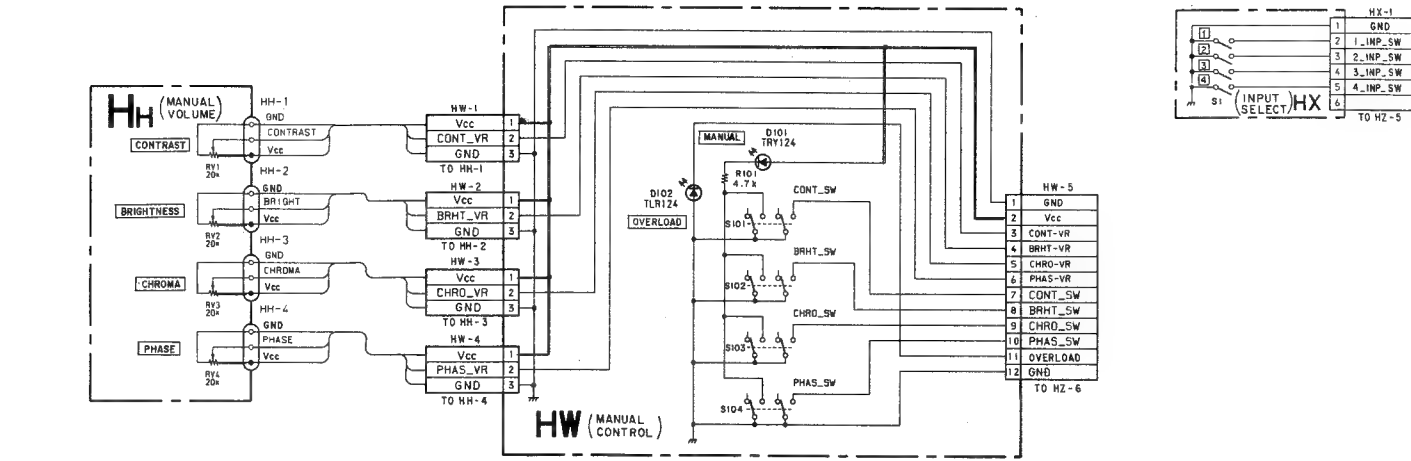


HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),  
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), XB board (TALLY), Y board (POWER LED)



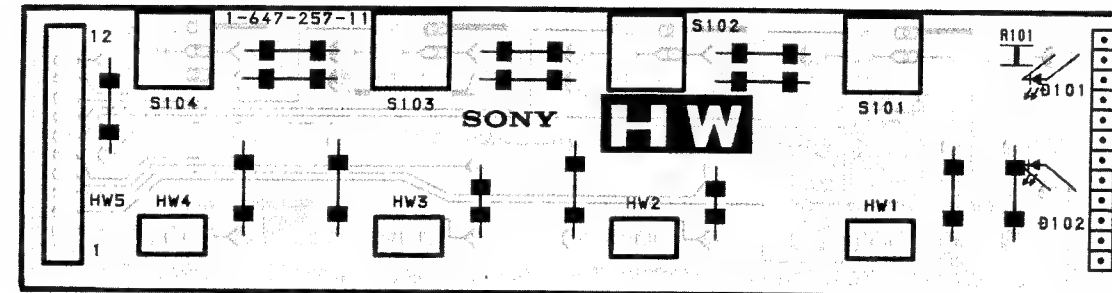
HY BOARD

IC1	CX-7991	KEY SCAN	D 35	TLY124	INDICATOR
2	CX-7991	KEY SCAN	36	TLY124	INDICATOR
3	CX-7991	KEY SCAN	37	TLY124	INDICATOR
Q1	25C2757	KEY DETECTION	38	TLY124	INDICATOR
D1	MA110	PROTECTION	39	MA110	PROTECTION
2	MA110	PROTECTION	40	MA110	PROTECTION
3	MA110	PROTECTION	41	TLY124	INDICATOR
4	MA110	PROTECTION	42	TLY124	INDICATOR
5	MA110	PROTECTION	43	TLY124	INDICATOR
6	MA110	PROTECTION	44	TLY124	INDICATOR
7	MA110	PROTECTION	45	MA110	PROTECTION
8	MA110	PROTECTION	46	MA110	PROTECTION
9	MA110	PROTECTION	47	MA110	PROTECTION
10	MA110	PROTECTION	48	MA110	PROTECTION
11	MA110	PROTECTION	49	MA110	PROTECTION
12	MA110	PROTECTION	50	TLY124	INDICATOR
13	TLY124	INDICATOR	51	TLY124	INDICATOR
14	TLY124	INDICATOR	52	MA110	PROTECTION
15	TLY124	INDICATOR	53	MA110	PROTECTION
16	TLY124	INDICATOR	54	MA110	PROTECTION
17	TLY124	INDICATOR	55	MA110	PROTECTION
18	TLY124	INDICATOR	56	MA110	PROTECTION
19	TLY124	INDICATOR	57	MA110	PROTECTION
20	TLY124	INDICATOR	58	MA110	PROTECTION
21	TLY124	INDICATOR	59	MA110	PROTECTION
22	TLY124	INDICATOR	60	MA110	PROTECTION
23	TLY124	INDICATOR	61	MA110	PROTECTION
24	TLY124	INDICATOR	62	MA110	PROTECTION
25	TLY124	INDICATOR	63	TLY124	INDICATOR
26	MA110	PROTECTION	64	TLY124	INDICATOR
27	MA110	PROTECTION	65	TLY124	INDICATOR
28	MA110	PROTECTION	66	TLY124	INDICATOR
29	MA110	PROTECTION	67	TLY124	INDICATOR
30	TLY124	INDICATOR	68	TLY124	INDICATOR
31	TLY124	INDICATOR	69	TLY124	INDICATOR
32	TLY124	INDICATOR			
33	TLY124	INDICATOR			
34	TLY124	INDICATOR			

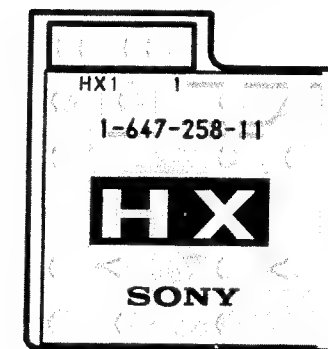


D 101	TLR124	INDICATOR
102	TLR124	INDICATOR

HW board (MANUAL CONTROL)



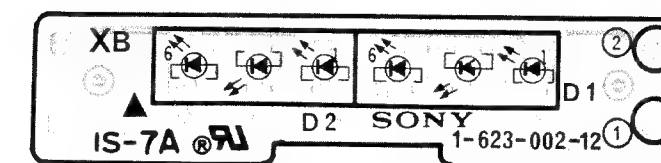
HX board (INPUT SELECT)



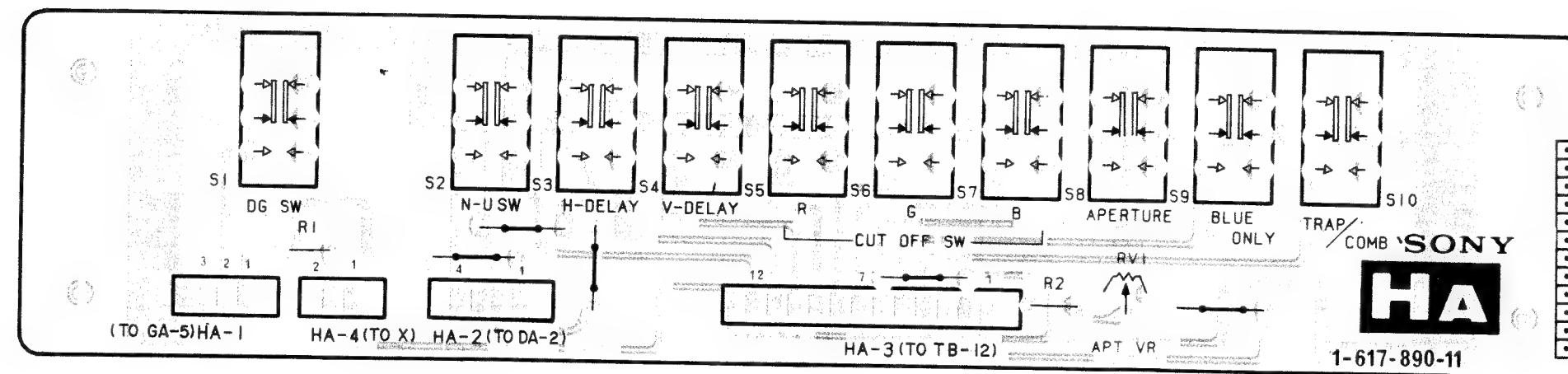
HH board (MANUAL VOLUME)



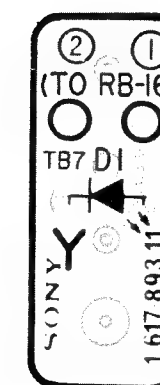
XB board (TALLY)



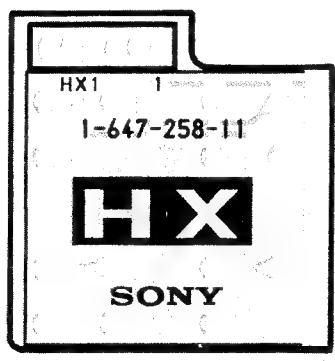
HA board (PANEL CONTROL)



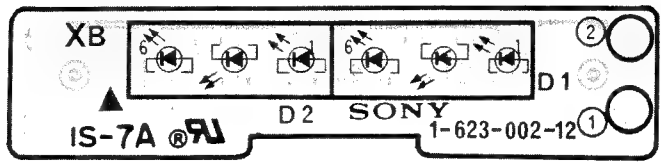
Y board (POWER LED)



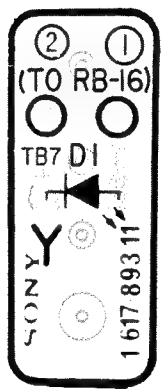
HX board (INPUT SELECT)



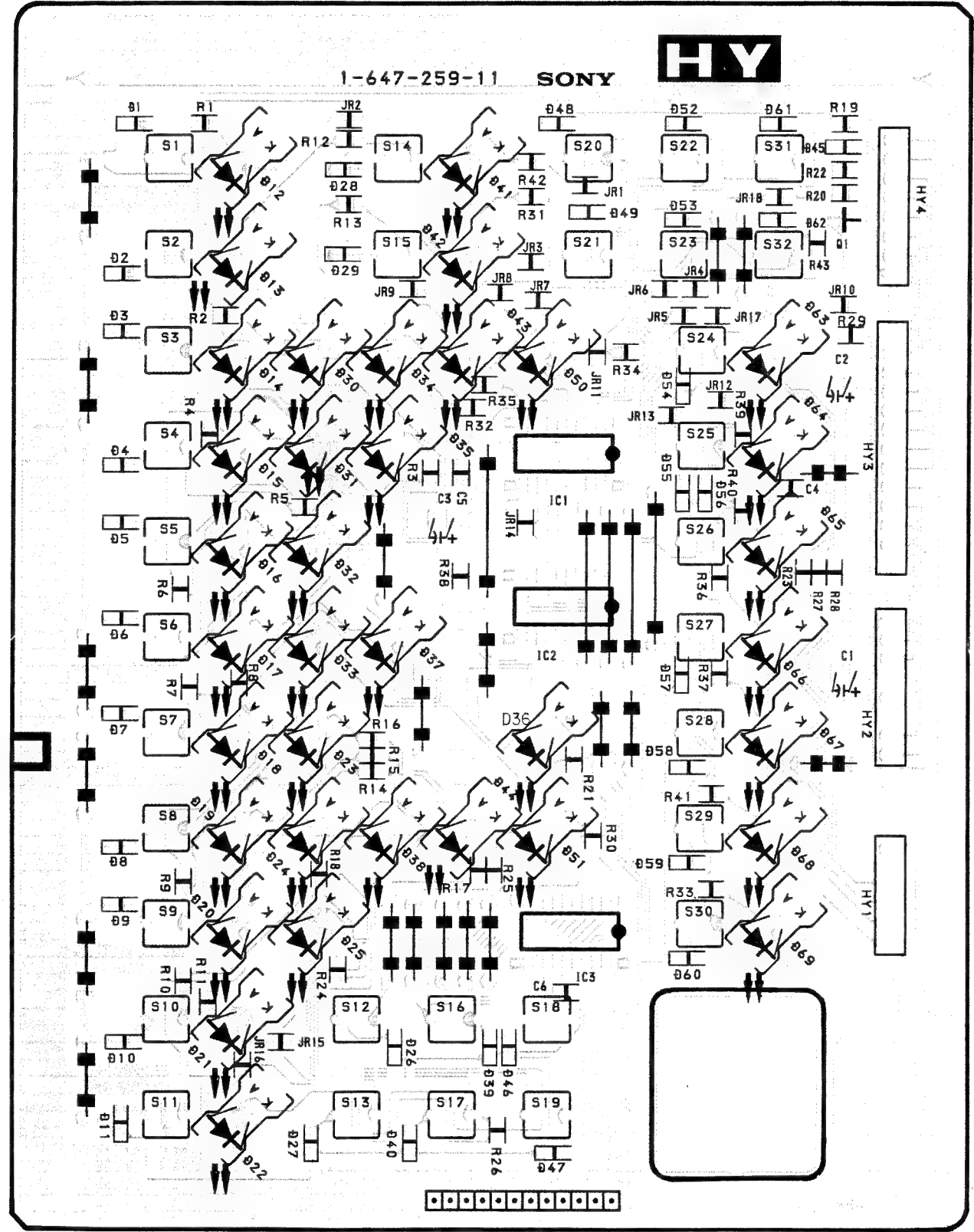
XB board (TALLY)



Y board (POWER LED)



HY board (CONTROL FUNCTION SELECT)

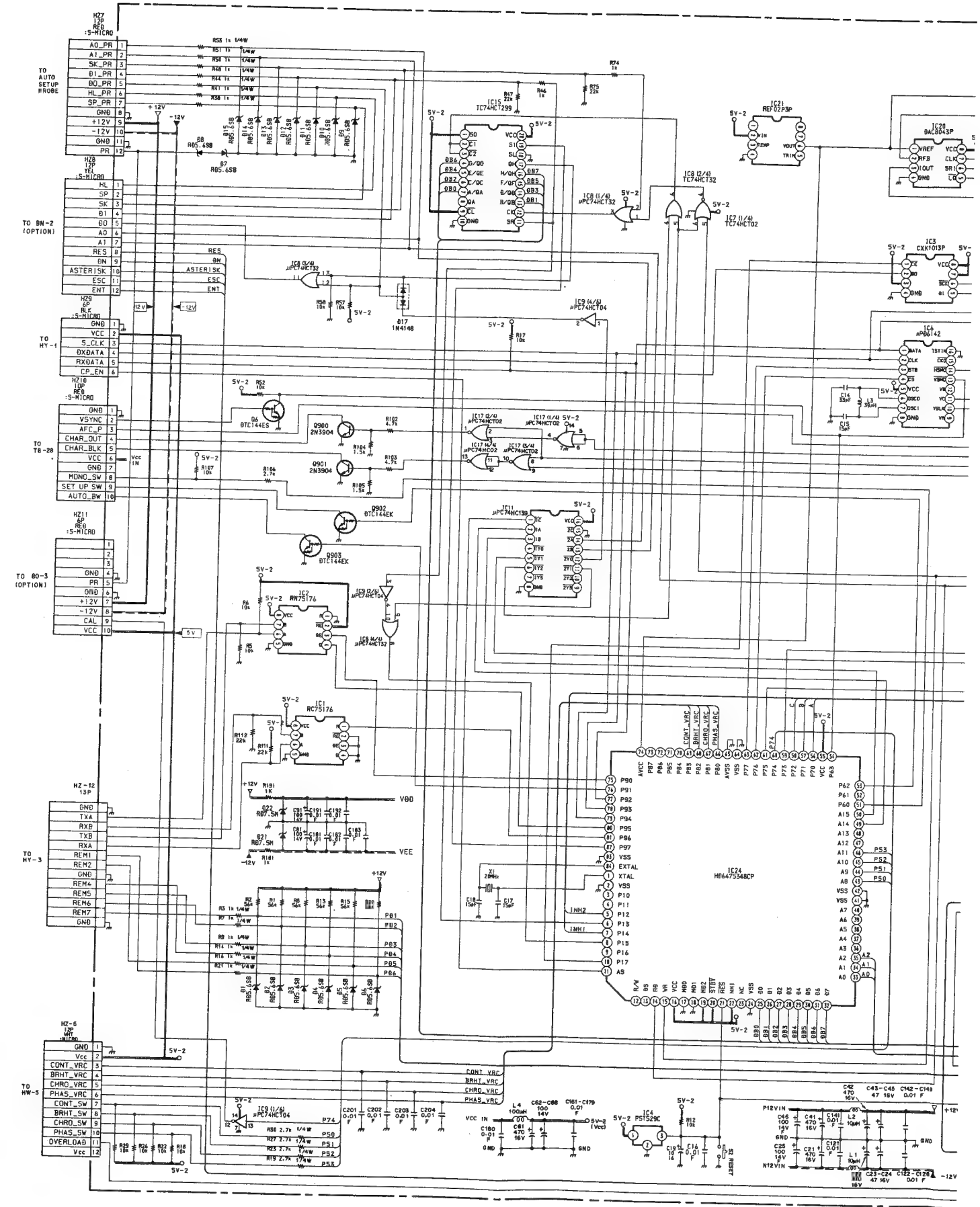


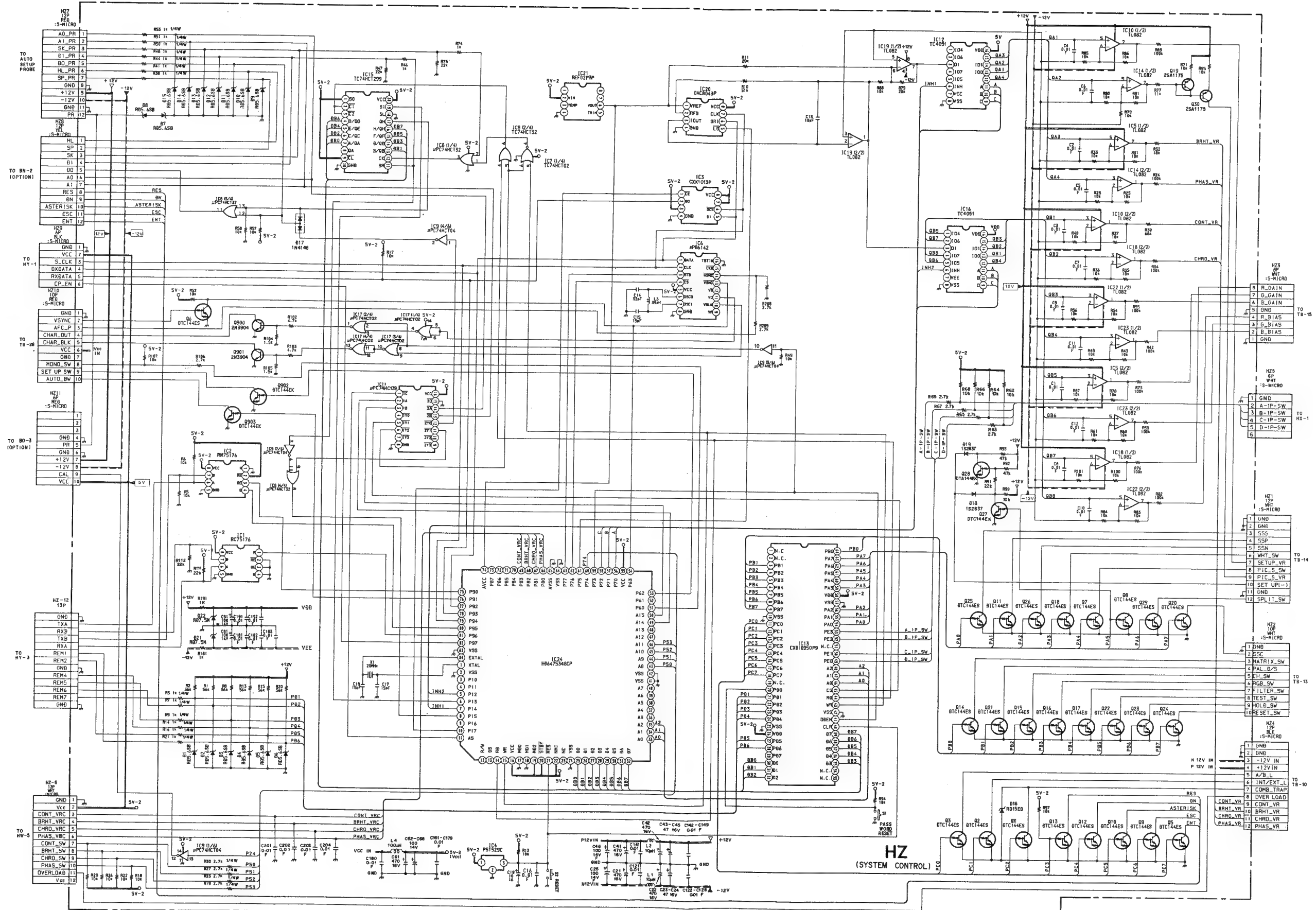
5. DIAGRAMS

• : Pattern from the side which enables seeing.  
• : Pattern of the rear side.

HZ BOARD

IC 1	SN75176BP	RECEIVER
2	SN75176BP	TRANSMITTER
3	X25040	NV RAM
4	PST529C	RESET
5	TL082M	OP AMP
6	UPD6142G-101	ON SCREEN D
7	TC74HCT02AF	NOR GATE
8	TC74HCT32AF	OR GATE
9	TC74HCT04AF	INVERTOR
10	TL082M	SAMPLE HOLD
11	TC74HCT139AF	DECODER
12	MC14051BF	DE-MULTIPLEXER
13	CXD10950	I/O EXPANDER
14	TL082M	SAMPLE HOLD
15	TC74HC299AF	SHIFT REGISTER
16	MC14051BF	DE-MULTIPLEXER
17	TC74HCT02AF	NOR GATE
18	TL082M	SAMPLE HOLD
19	TL082M	SAMPLE HOLD
20	DAC8043GP	D/A CONNECTOR
21	REF02EZ	REF. VOLTAGE
22	TL082M	SAMPLE HOLD
23	TL082M	SAMPLE HOLD
24	HD6475368CP-BVM	CPU
0 2	DTC144EK	OUTPUT BUFFER
3	DTC144EK	OUTPUT BUFFER
4	DTC144EK	OUTPUT BUFFER
5	DTC144EK	OUTPUT BUFFER
6	DTC144EK	OUTPUT BUFFER
7	DTC144EK	OUTPUT BUFFER
8	DTC144EK	OUTPUT BUFFER
9	DTC144EK	OUTPUT BUFFER
10	DTC144EK	OUTPUT BUFFER
11	DTC144EK	OUTPUT BUFFER
12	DTC144EK	OUTPUT BUFFER
13	DTC144EK	OUTPUT BUFFER
14	DTC144EK	OUTPUT BUFFER
15	DTC144EK	OUTPUT BUFFER
16	DTC144EK	OUTPUT BUFFER
17	DTC144EK	OUTPUT BUFFER
18	DTC144EK	OUTPUT BUFFER
19	2SA1226	OUTPUT BUFFER
20	DTC144EK	OUTPUT BUFFER
21	DTC144EK	OUTPUT BUFFER
22	DTC144EK	OUTPUT BUFFER
23	DTC144EK	OUTPUT BUFFER
24	DTC144EK	OUTPUT BUFFER
25	DTC144EK	OUTPUT BUFFER
26	DTC144EK	OUTPUT BUFFER
27	DTC144EK	OUTPUT BUFFER
28	DTC144EK	OUTPUT BUFFER
29	DTC144EK	OUTPUT BUFFER
30	2SA1226	OUTPUT BUFFER
900	2SC1623	OUTPUT BUFFER
901	2SC1623	OUTPUT BUFFER
902	DTC144EK	OUTPUT BUFFER
903	DTC144EK	OUTPUT BUFFER
D 1	RD5.6ES-T1B	PROTECTION
2	RD5.6ES-T1B	PROTECTION
3	RD5.6ES-T1B	PROTECTION
4	RD5.6ES-T1B	PROTECTION
5	RD5.6ES-T1B	PROTECTION
6	RD5.6ES-T1B	PROTECTION
7	RD5.6ES-T1B	PROTECTION
8	RD5.6ES-T1B	PROTECTION
9	RD5.6ES-T1B	PROTECTION
10	RD5.6ES-T1B	PROTECTION
11	RD5.6ES-T1B	PROTECTION
12	RD5.6ES-T1B	PROTECTION
13	RD5.6ES-T1B	PROTECTION
14	RD5.6ES-T1B	PROTECTION
15	RD5.6ES-T1B	PROTECTION
17	1S2835	SWITCH
18	1S2837	SWITCH
19	1S2837	SWITCH
21	RD7.5M-T1B2	-7.5V REG
22	RD7.5M-T1B2	+7.5V REG



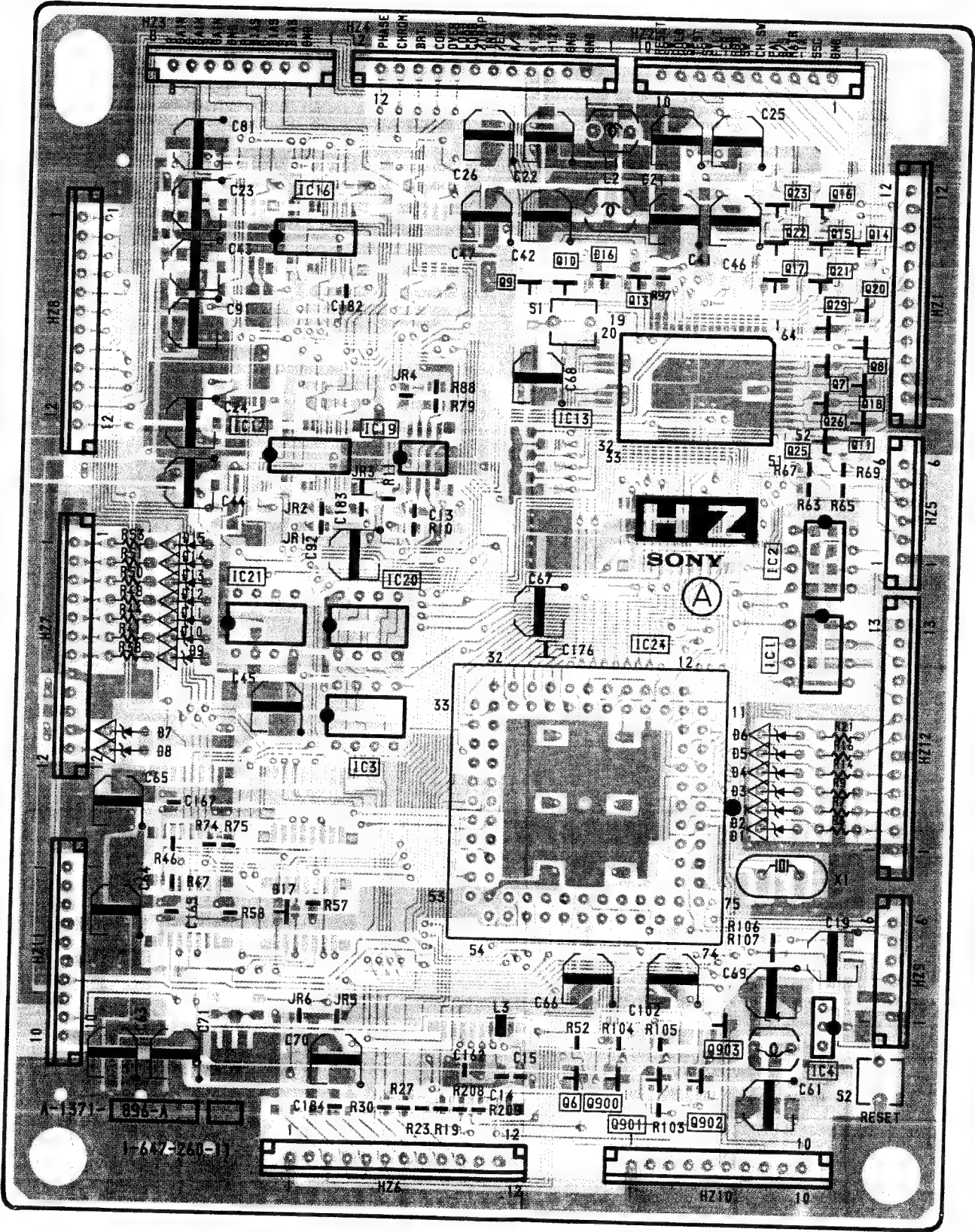




HZ board (SYSTEM CONTROL)

— CONDUCTOR SIDE —

IC	Q	D
16	23 16 22 15 14 9 10 13 17 21 20 29 8 7 18 26 11 25	16
13		
12 19		
2		15 14 13 12 11 10 9
21 20 1		7 8
3		6 5 4 3 2 1
24		17
4	903 6 900 901 902	

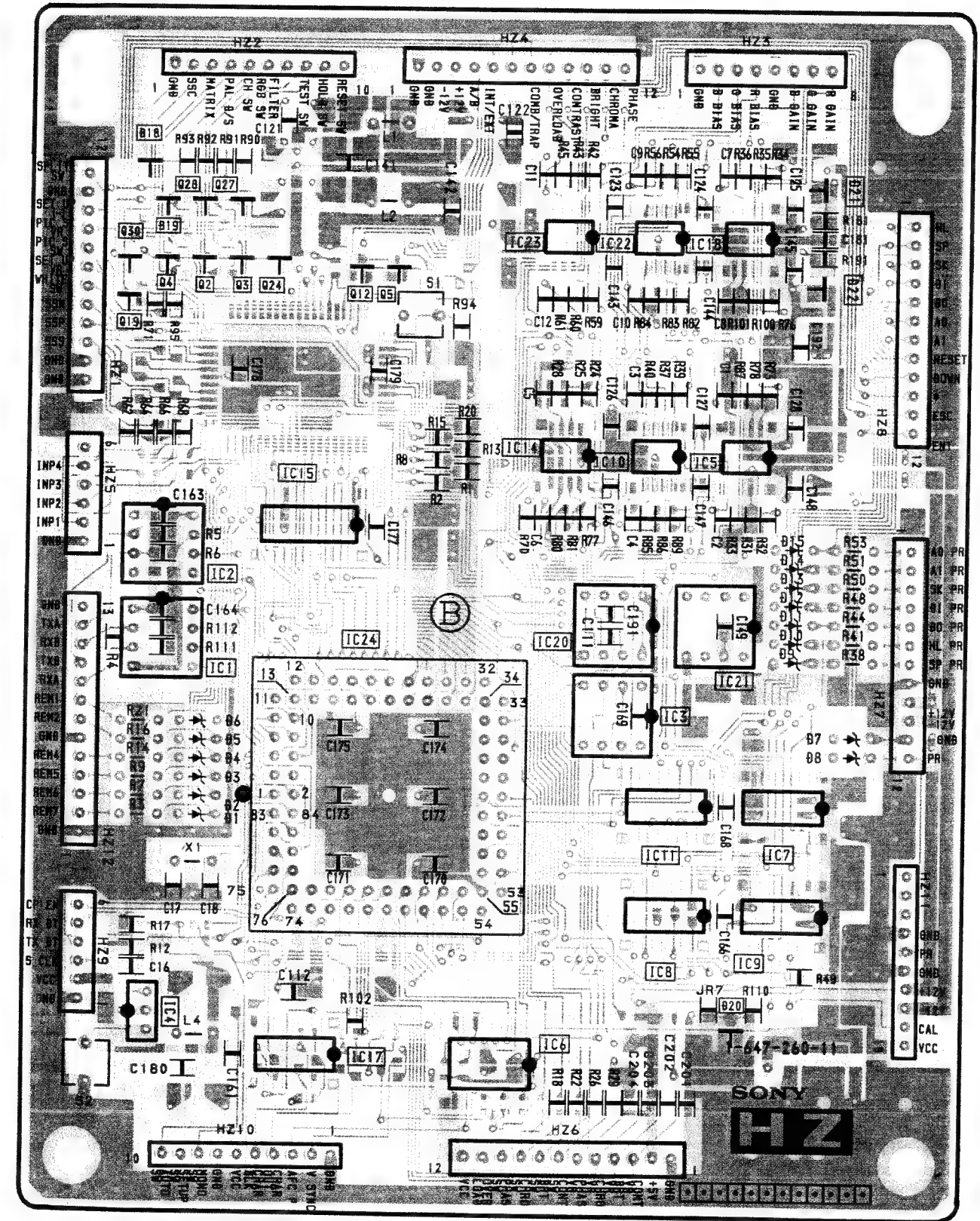


— COMPONENT SIDE —

IC	Q	D
23 22 18	28,27 30 4 2 3 24 19 12 5	18 19 21 22
14 10 5		
2 15		15 14 13 12 11 10 9
1 20 21		7 8
3		6 5 4 3 2 1
24 11 7		20
8 9		
4 17 6		

— COMPONENT SIDE —

IC	Q	D
23 22 18	28, 27	18
	30 4 2 3 24	19 21
	19	12 5
		22
14 10 5		
2 15		15
	20 21	14
		13
		12
		11
		10
		9
	3	
		7
24	11 7	8
	8 9	
4		20
17 6		

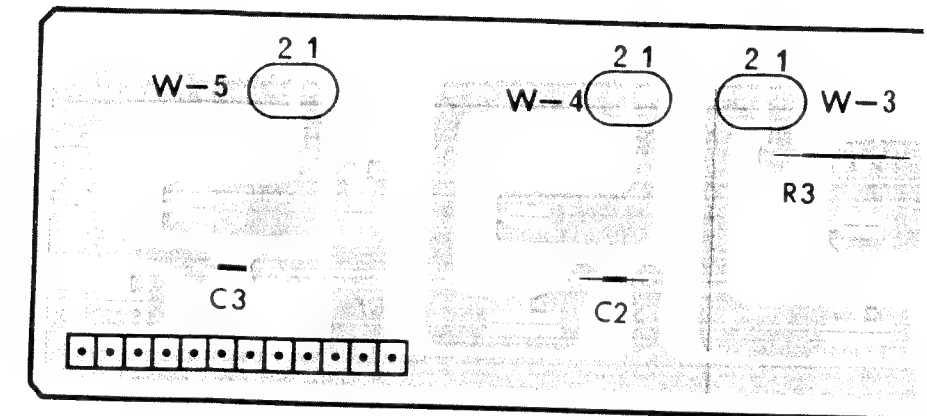
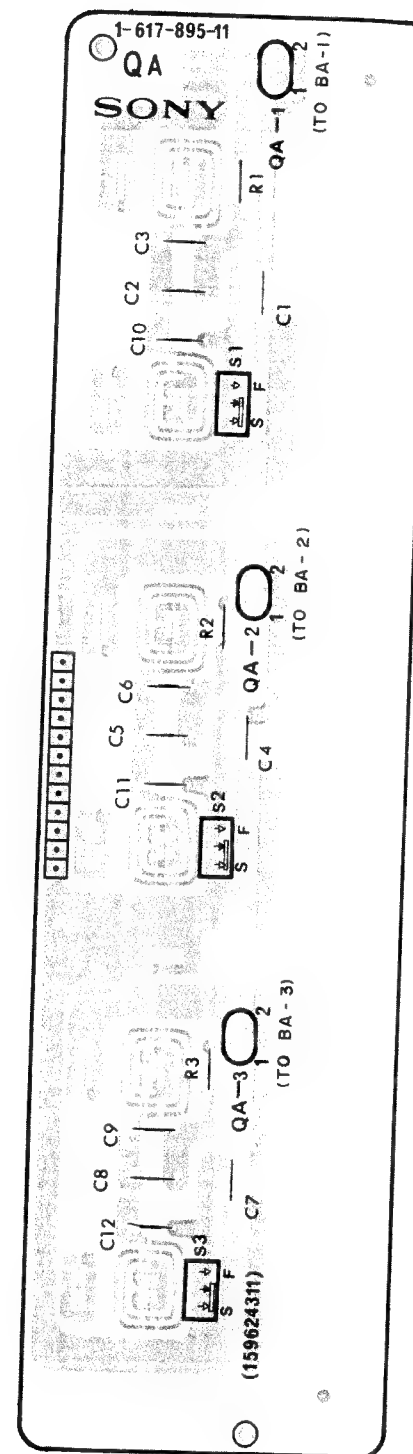


5. DIAGRAMS

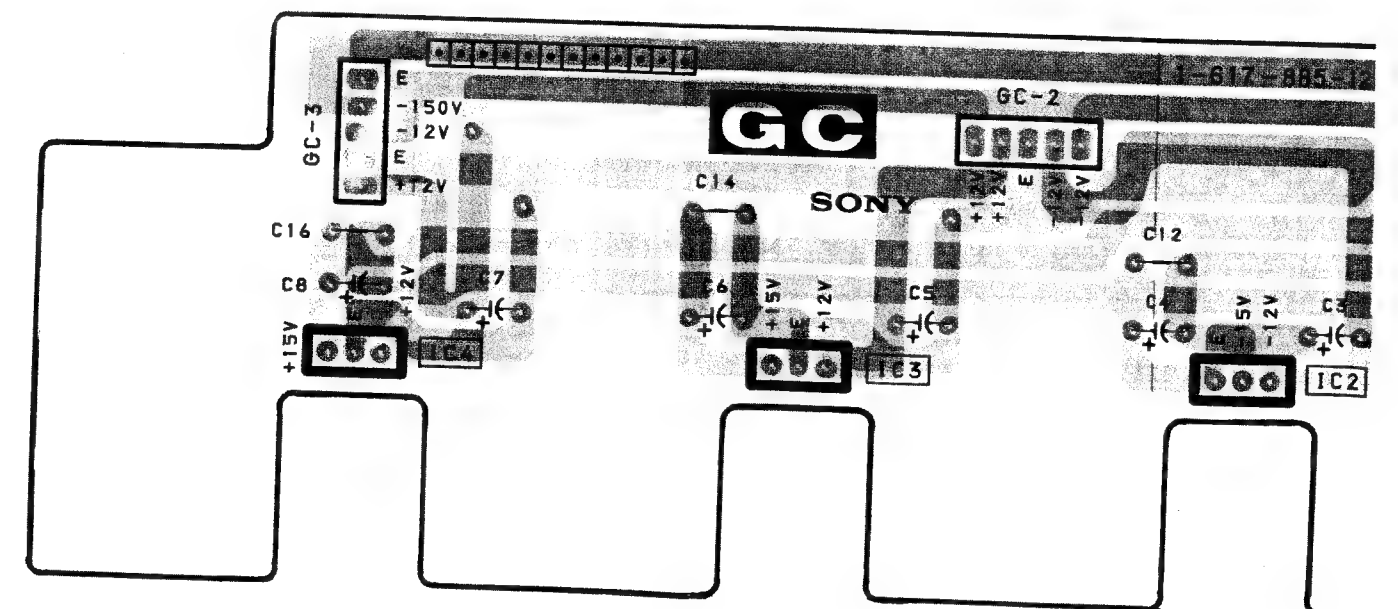
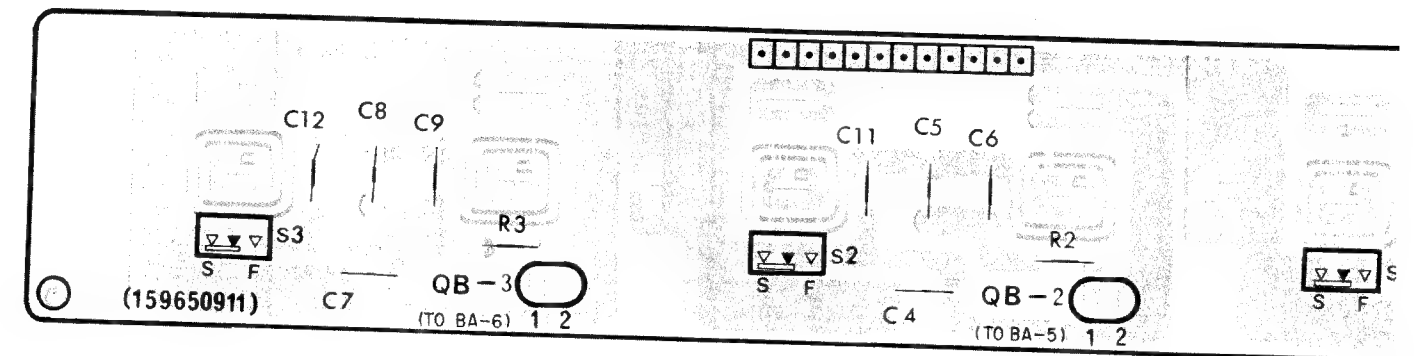
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



**W board (RGB/COMPONENT)**

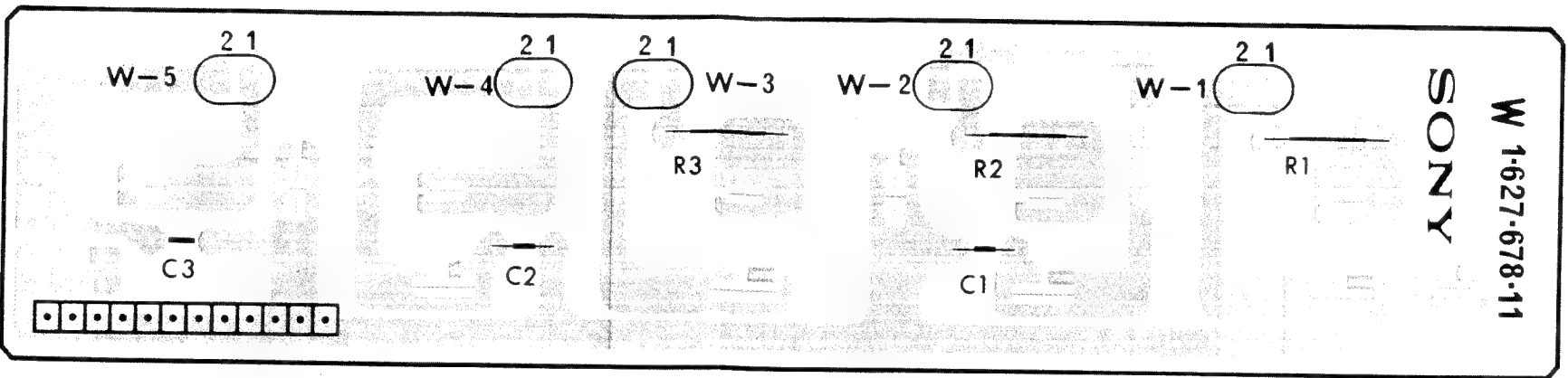


GC board (REG)

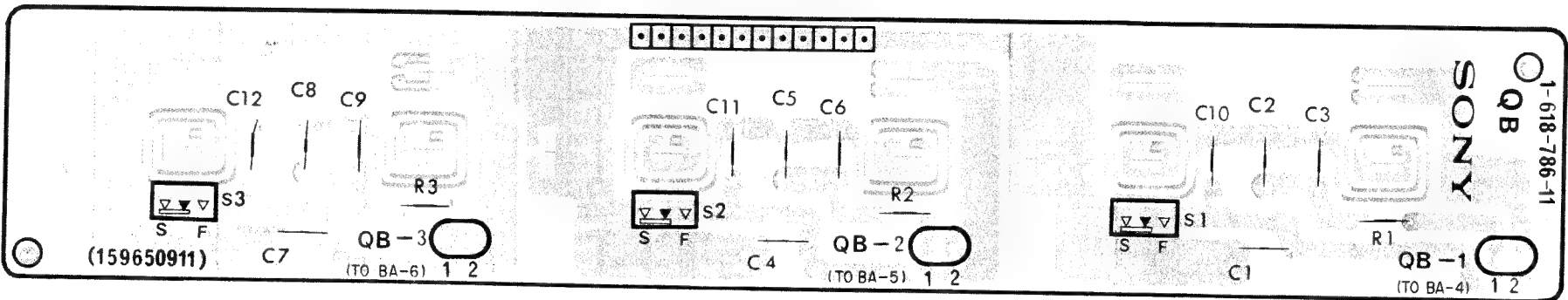


COMPOSITE VIDEO INPUT)

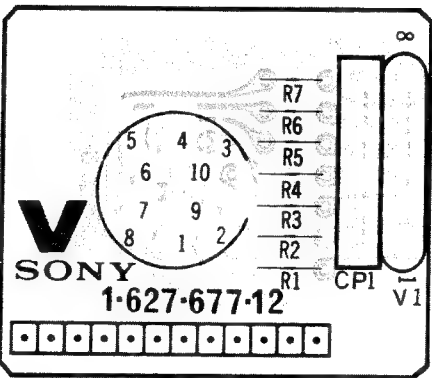
W board (RGB/COMPONENT)



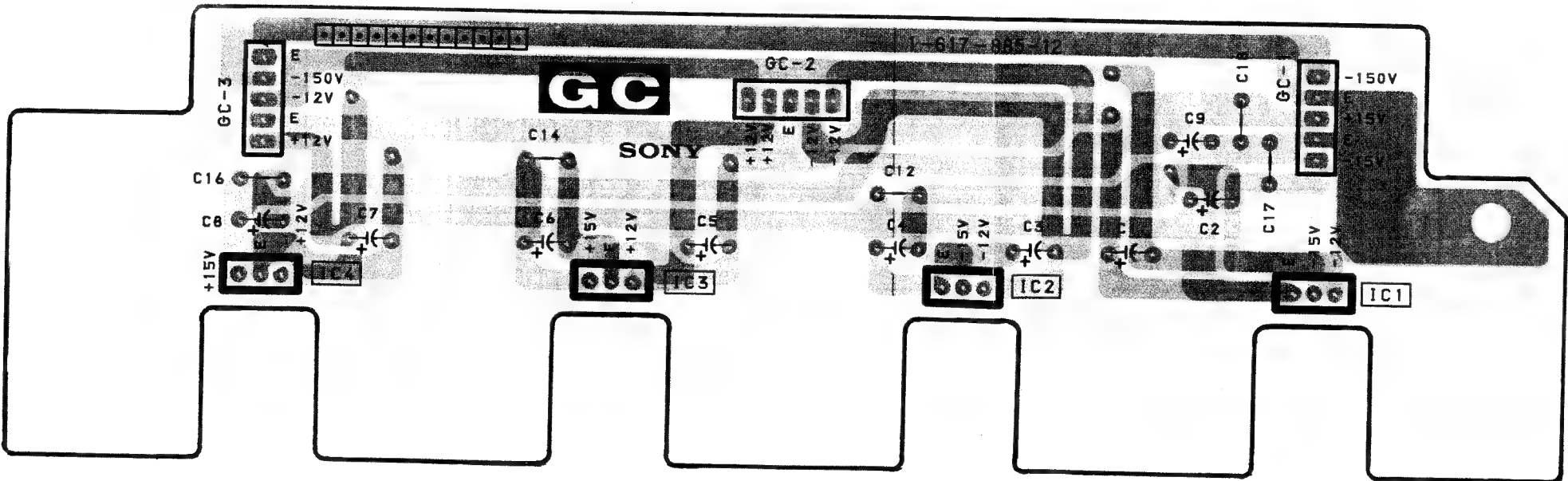
QB board (RGB/COMPONENT INPUT)



V board (REMOTE)

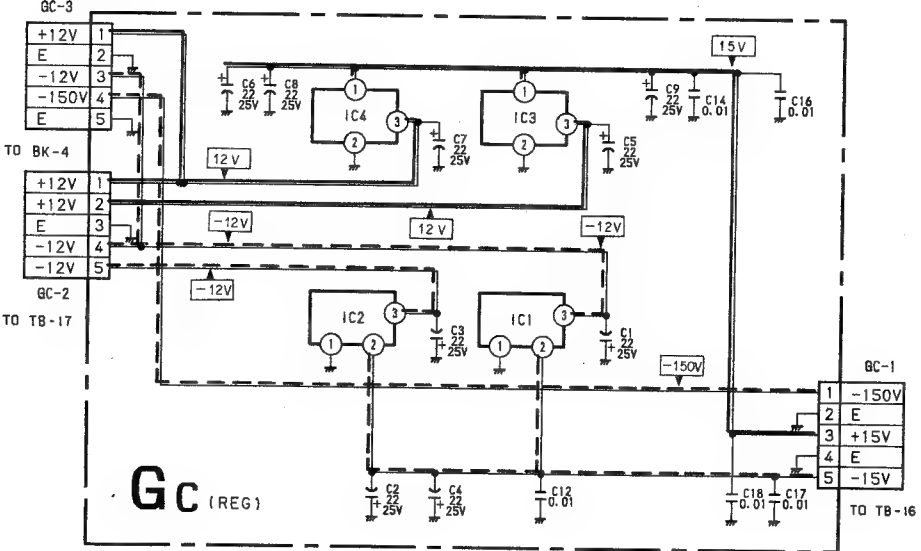
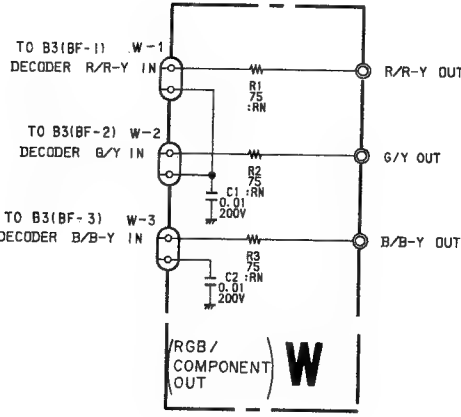
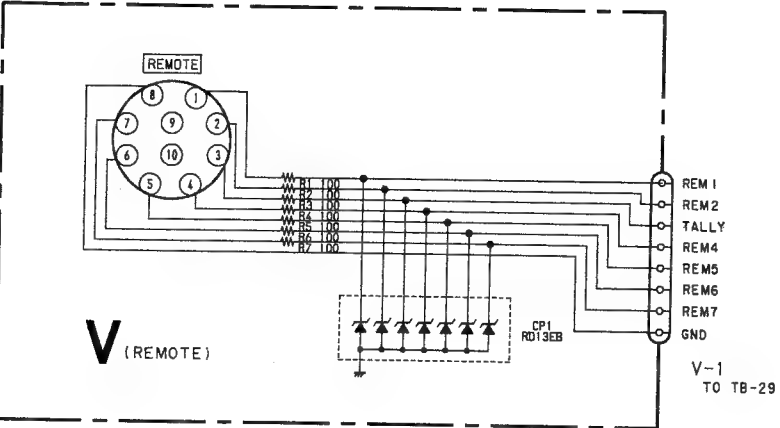
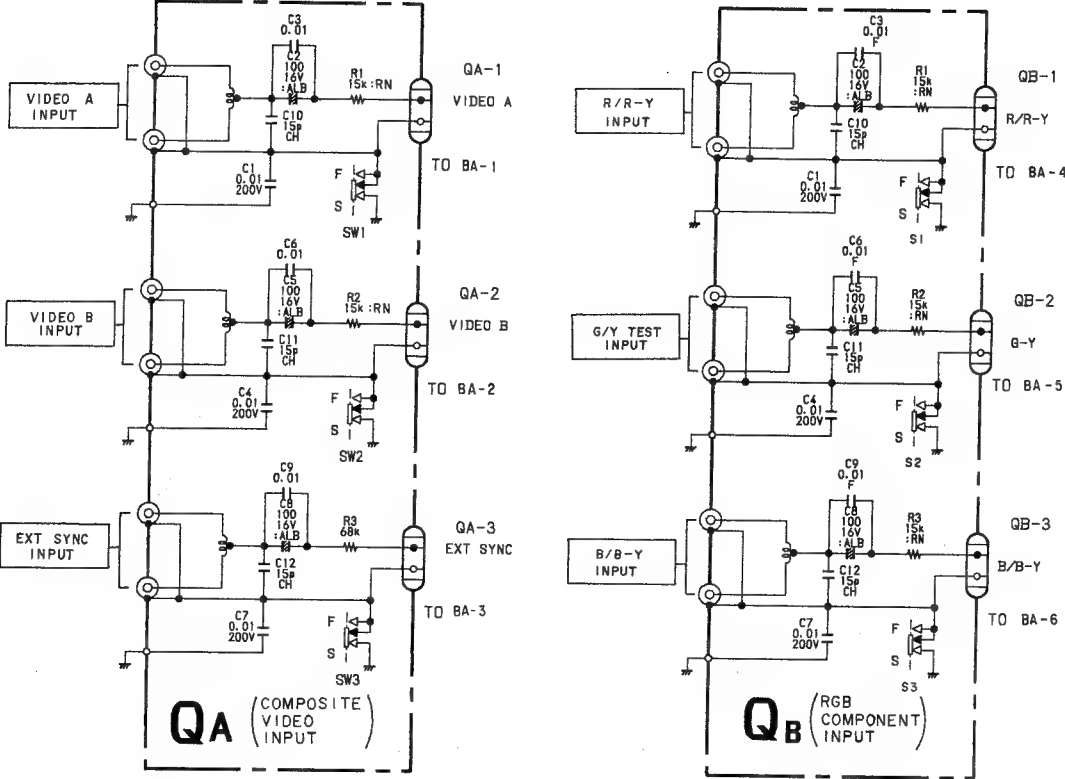


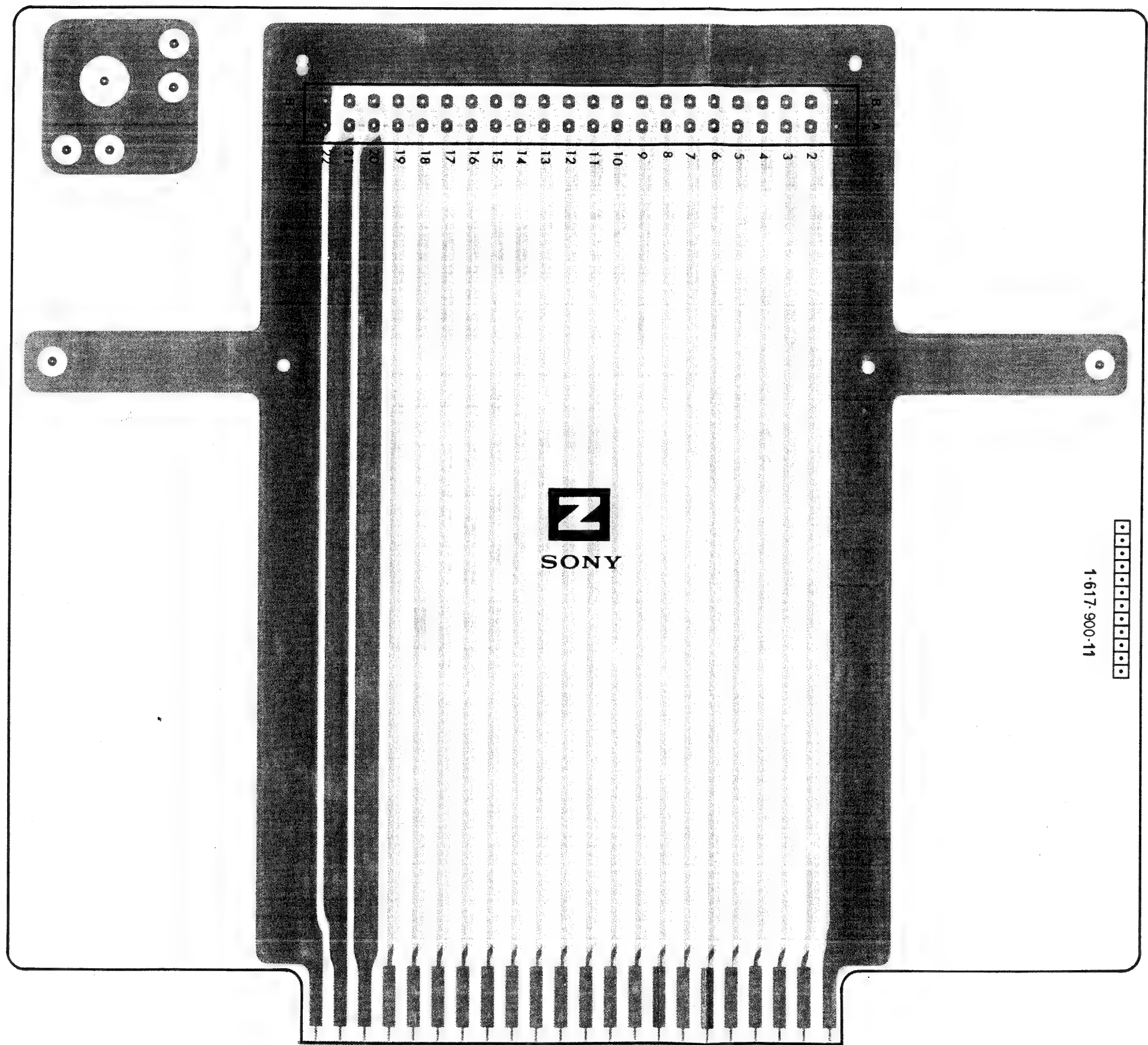
GC board (REG)



GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)  
V board (REMOTE) W board (RGB/COMPONENT)

GC BOARD			
IC	1	uPD7912H	-12V REG
	2	uPD7912H	-12V REG
	3	uPD7812H	+12V REG
	4	uPD7812H	+12V REG







5-109

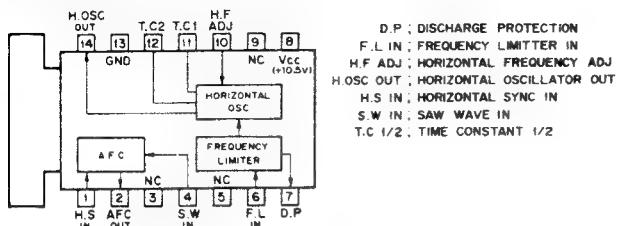
1-617-900-11

5-110

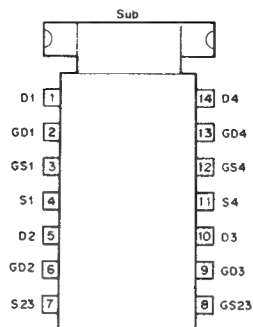
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

## 5-4. SEMICONDUCTORS

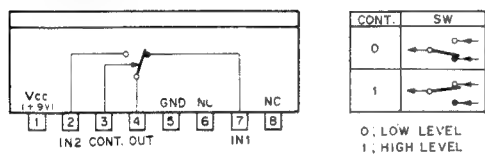
CX-158 (SONY)  
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER  
— TOP VIEW —



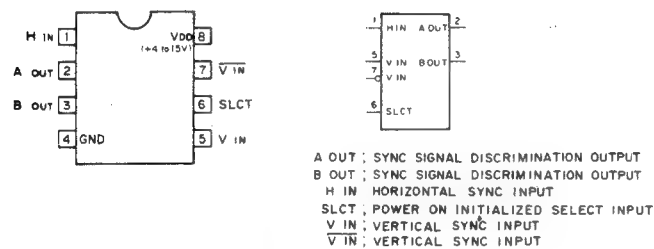
CX-718D (SONY)  
SRG FET IC  
— TOP VIEW —



CX20061 (SONY)  
ANALOG SWITCH  
— SIDE VIEW —



CX23025 (SONY)  
C-MOS TV-VTR SYNC SIGNAL DISCRIMINATOR  
— TOP VIEW —

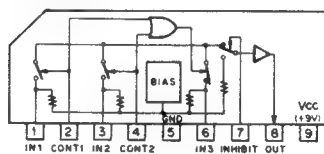


POWER ON INITIALIZED		
SLCT INPUT	A OUTPUT	B OUTPUT
1	0	1
0	1	0

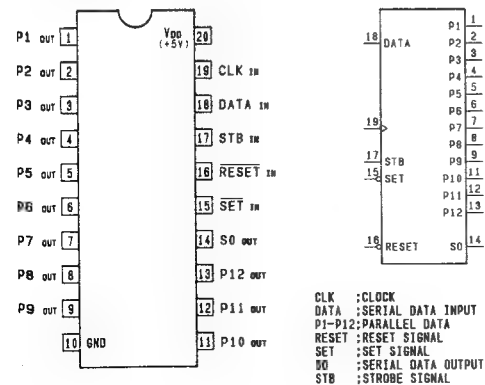
DISCRIMINATION		
V SYNC INPUT FREQUENCY	OUTPUTS	
	A	B
50Hz	0	1
60Hz	1	0

0 ; LOW LEVEL  
1 ; HIGH LEVEL

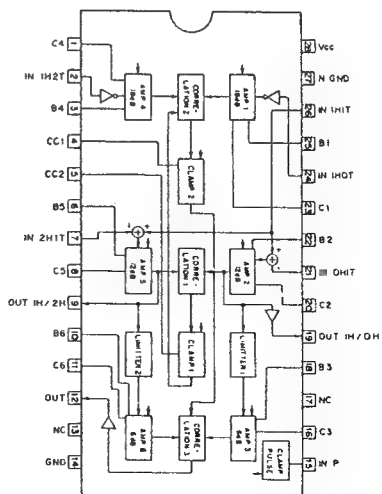
CX894 (SONY)  
3 INPUT SWITCH  
— SIDE VIEW —



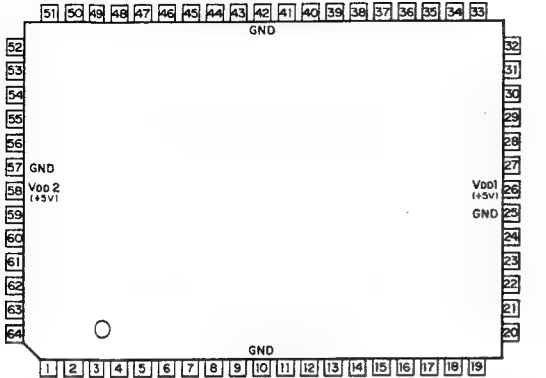
CX7991 (SONY)  
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER  
- TOP VIEW -



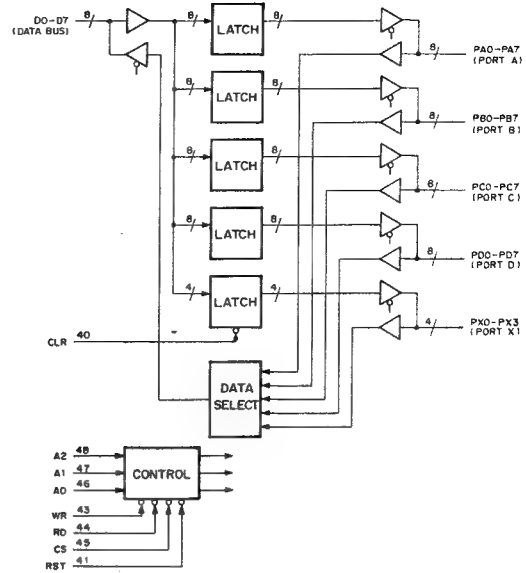
CXA1539P



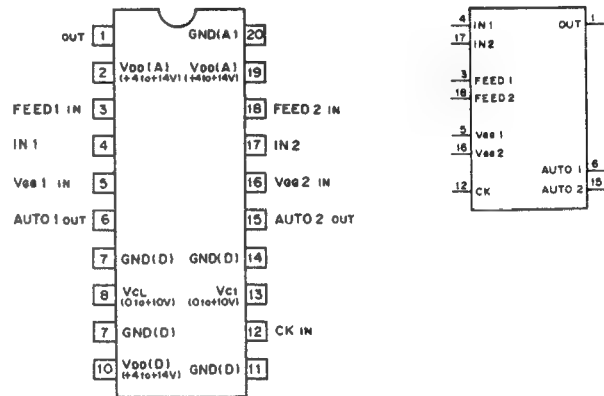
CXD1095Q (SONY) FLAT PACKAGE  
C-MOS I/O PORT EXPANDER  
— TOP VIEW —



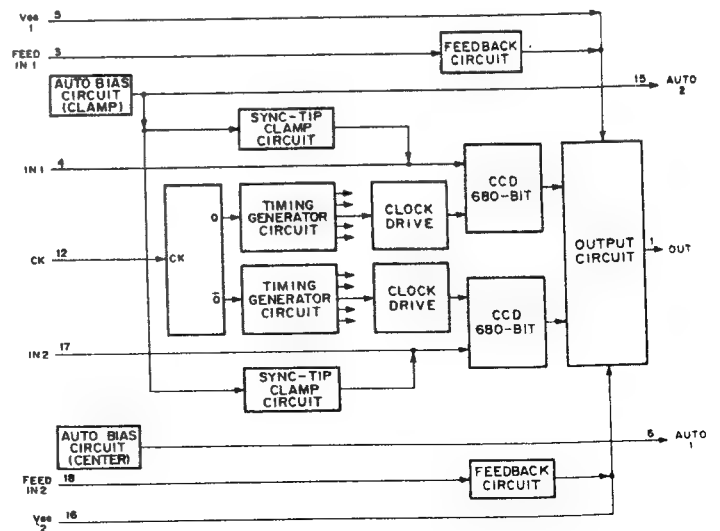
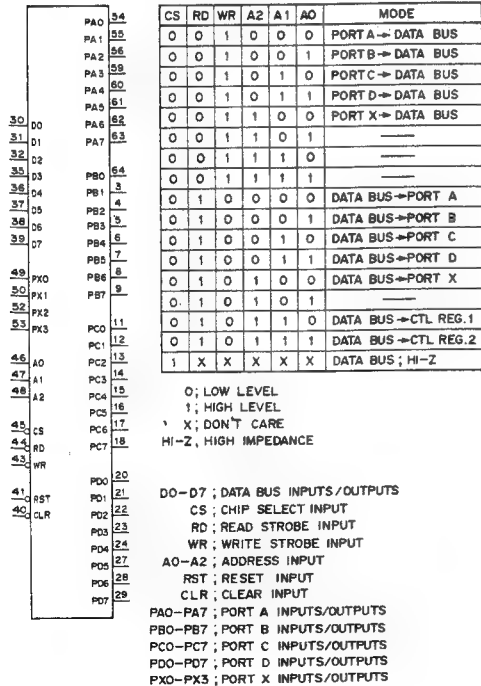
PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	O	O	PC6	33			NC	49	O	O	PX0
2			NC	18	O	O	PC7	34			NC	50	O	O	PX1
3	O	O	PB1	19			NC	35	O	O	D3	51			NC
4	O	O	PB2	20	O	O	PD0	36	O	O	D4	52	O	O	PX2
5	O	O	PB3	21	O	O	PD1	37	O	O	D5	53	O	O	PX3
6	O	O	PB4	22	O	O	PD2	38	O	O	D6	54	O	O	PA0
7	O	O	PB5	23	O	O	PD3	39	O	O	D7	55	O	O	PA1
8	O	O	PB6	24	O	O	PD4	40	O	O	CLR	56	O	O	PA2
9	O	O	PB7	25			GND	41	O	O	RST	57			GND
10			GND	26	O	O	VDD(+5V)	42			GND	58	O	O	VDD(+5V)
11	O	O	PC0	27	O	O	PD5	43	O	O	WR	59	O	O	PA3
12	O	O	PC1	28	O	O	PD6	44	O	O	RD	60	O	O	PA4
13	O	O	PC2	29	O	O	PD7	45	O	O	CS	61	O	O	PA5
14	O	O	PC3	30	O	O	D0	46	O	O	A0	62	O	O	PA6
15	O	O	PC4	31	O	O	D1	47	O	O	A1	63	O	O	PA7
16	O	O	PC5	32	O	O	D2	48	O	O	A2	64	O	O	PB0



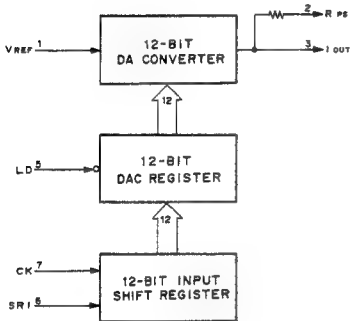
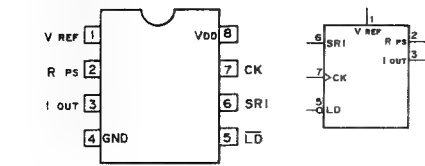
CXL1009P (SONY)  
C-MOS CCD SIGNAL PROCESSOR FOR TBC  
— TOP VIEW —



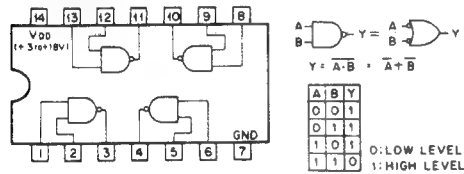
OUT : OUT PUT  
FEED 1/2 IN : FEEDBACK INPUT 1/2  
IN 1/2 : INPUT 1/2  
Vee 1/2 IN : GATE INPUT 1/2  
AUTO 1/2 OUT : AUTO BIAS OUTPUT 1/2  
CK IN : CLOCK INPUT  
VCL : POWER SUPPLY 2 (DIGITAL)  
VDD (A1)/(D) : POWER SUPPLY 1 (ANALOG)/(DIGITAL)  
GND(A1)/(D) : GROUND (ANALOG)/(DIGITAL)



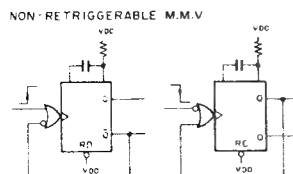
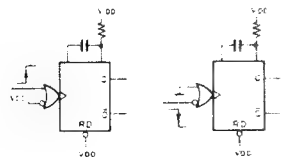
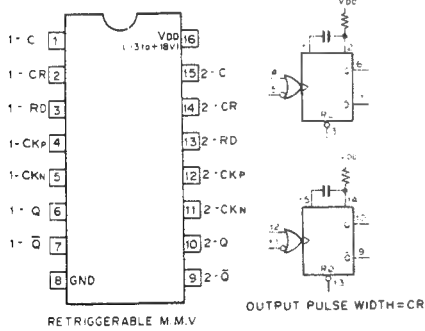
DAC8043GP (PMI)  
C-MOS 12-BIT SERIAL INPUT D/A CONVERTER  
— TOP VIEW —



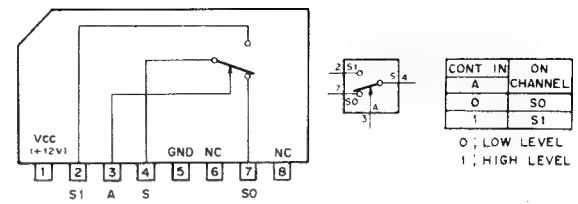
HD14011BP (HITACHI)  
MC14011BCP (MOTOROLA)  
TC4011BP (TOSHIBA)  
uPD4011BC (NEC)  
C-MOS 2-INPUT NAND GATE  
— TOP VIEW —



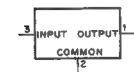
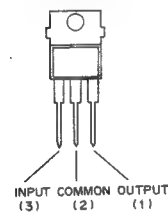
HD14538BP (HITACHI)  
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE  
MONOSTABLE MULTIVIBRATOR  
— TOP VIEW —



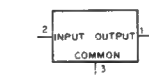
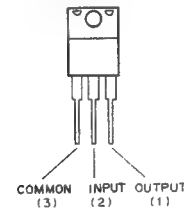
LA7016 (SANYO)  
ELECTRONIC SWITCH  
— SIDE VIEW —



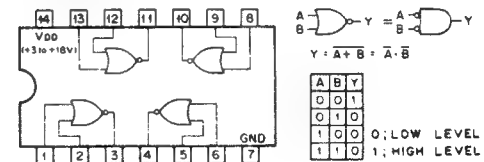
LM7812CT  
XRA17809T  
POSITIVE VOLTAGE REGULATOR (500mA)  
— FRONT VIEW —



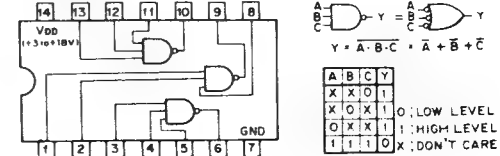
LM7912CT (NS) - 12V  
NEGATIVE VOLTAGE REGULATOR  
— FRONT VIEW —



MC14001BCP (MOTOROLA)  
uPD4001BC (NEC)  
C-MOS 2-INPUT NOR GATE  
— TOP VIEW —

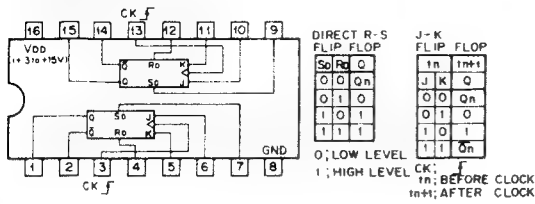


MC14023BCP (MOTOROLA)  
TC4023BP (TOSHIBA)  
C-MOS 3-INPUT NAND GATE  
— TOP VIEW —

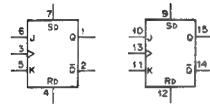
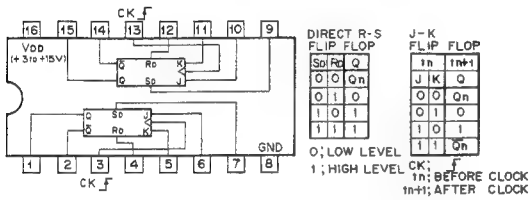




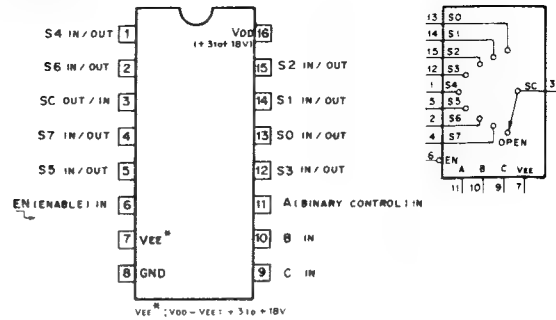
**MB84027B (FUJITSU)**  
TC504027BP (TOSHIBA)  
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET  
— TOP VIEW —



**MC14027BCP (MOTOROLA)**  
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET  
— TOP VIEW —



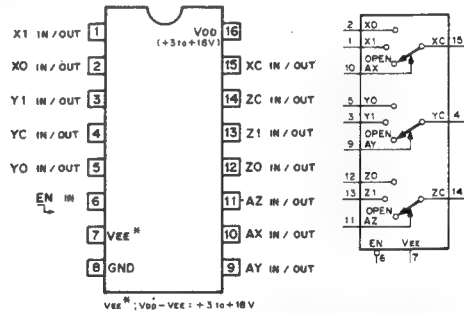
**MC14051BF**  
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER  
— TOP VIEW —



EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

Q: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE

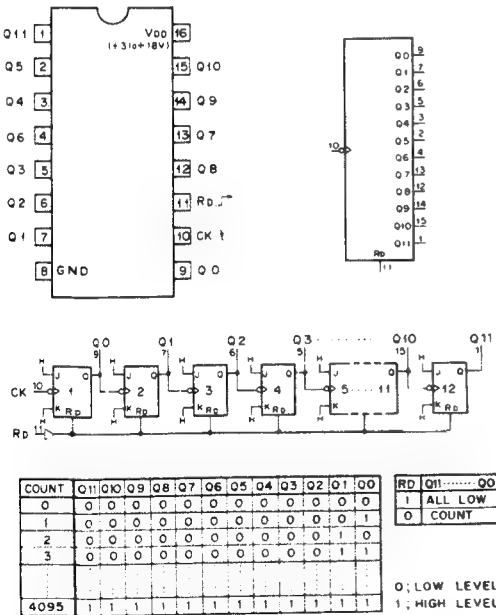
**MC14053BCP (MOTOROLA)**  
TC4053BP (TOSHIBA)  
XR4053BF  
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER  
— TOP VIEW —



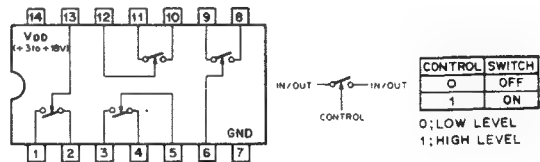
CONT. INPUTS		ON
EN	A (X,Y,Z)	CHANNEL
0	0	0
0	1	1
1	X	OPEN

Q: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE.

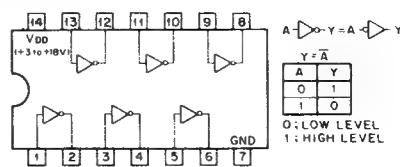
**MC14040BCP (MOTOROLA)**  
TC4040BP (TOSHIBA)  
C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER  
— TOP VIEW —



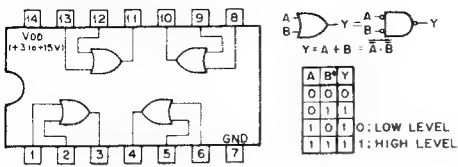
**MC14086BCP**  
uPD4086BC  
C-MOS BILATERAL ANALOG SWITCH  
— TOP VIEW —



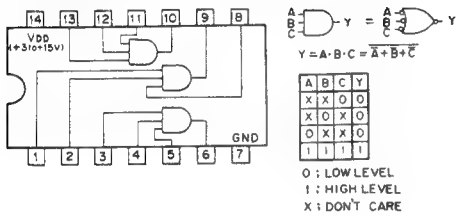
**MC14089UBCP**  
uPD4089UBC (NEC)  
C-MOS INVERTER  
— TOP VIEW —



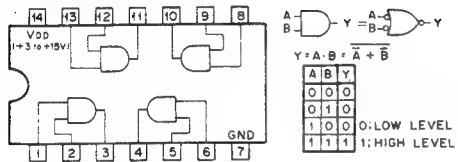
MC14071BCP (MOTOROLA)  
TC4071BP (TOSHIBA)  
uPD4071BC (NEC)  
C-MOS 2-INPUT OR GATE  
— TOP VIEW —



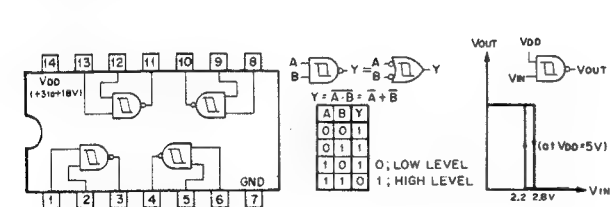
MC14073BCP (MOTOROLA)  
TC4073BP (TOSHIBA)  
uPD4073BC (NEC)  
C-MOS 3-INPUT POSITIVE AND GATE  
— TOP VIEW —



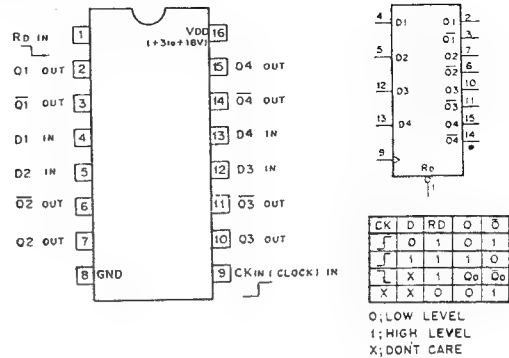
MC14081BCP (MOTOROLA)  
TC4081BP (TOSHIBA)  
uPD4081BC (NEC)  
C-MOS 2-INPUT AND GATE  
— TOP VIEW —



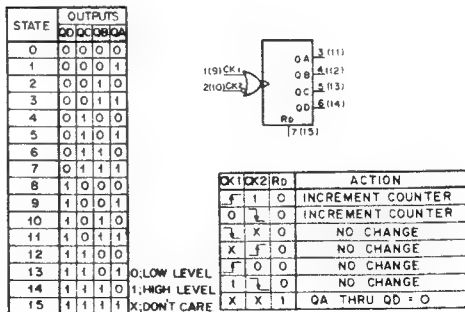
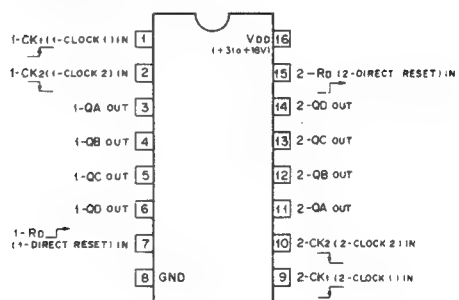
MC14093BCP  
TC4093BP (TOSHIBA)  
C-MOS 2-INPUT NAND SCHMITT TRIGGER  
— TOP VIEW —



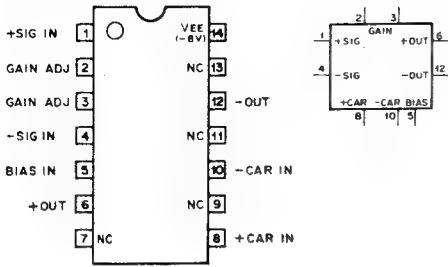
MC14175BCP (MOTOROLA)  
TC40175BP (TOSHIBA)  
C-MOS DECADE COUNTER/DIVIDER  
— TOP VIEW —



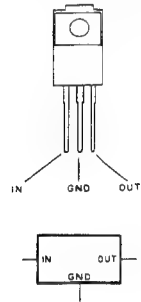
MC14520BCP (MOTOROLA)  
TC4520BP (TOSHIBA)  
C-MOS DUAL 4-BIT BINARY UP COUNTER  
— TOP VIEW —



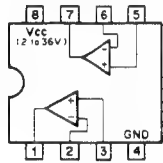
MC1496P (MOTOROLA)  
BALANCED MODULATOR/DEMODULATOR  
— TOP VIEW —



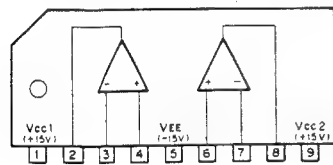
M578M12L (MITSUBISHI) +12V  
POSITIVE VOLTAGE REGULATOR (500mA)  
— PRINTED SIDE VIEW —



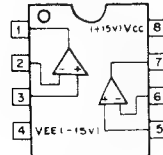
NJM2903D (JRC)  
VOLTAGE COMPARATOR  
— TOP VIEW —



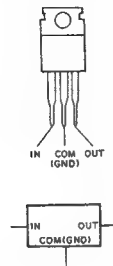
NJM4558  
NJM4558S (JRC)  
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER  
— SIDE VIEW —



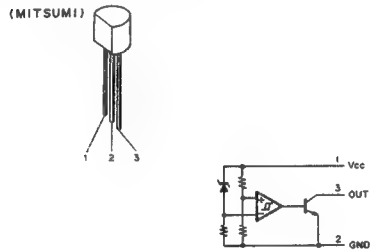
NJM4558D (JRC)  
uPC4558C (NEC)  
OPERATIONAL AMPLIFIER  
— TOP VIEW —



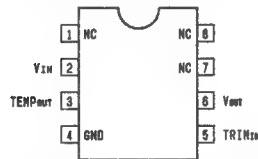
NJM7805FA  
NJM7809FA  
NJM7812FA  
uPC7812H  
POSITIVE VOLTAGE REGULATOR (1A)  
— SIDE VIEW —



PST529C (MITSUMI) V<sub>S</sub> = 4.5V  
VOLTAGE DETECTOR, SYSTEM RESET  
(MITSUMI)

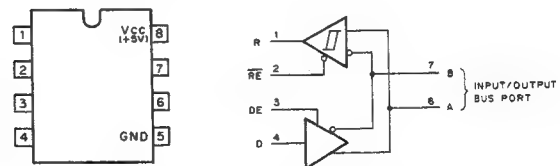


REF-02EZ (FMI)  
REFERENCE/TEMPERATURE TRANSDUCER  
— TOP VIEW —



V<sub>IN</sub> : INPUT VOLTAGE (+7V to +40V)  
TEMP<sub>OUT</sub> : TEMPERATURE TRANSDUCER  
VOLTAGE OUTPUT (2.1mV/°C)  
TRIM<sub>IN</sub> : OUTPUT SIGNAL TRIMMING  
V<sub>OUT</sub> : OUTPUT VOLTAGE (+5V)

SN75176BP (TI)  
TTL-DIFFERENTIAL BUS TRANSCEIVER  
— TOP VIEW —



FUNCTION TABLE  
— DRIVER —

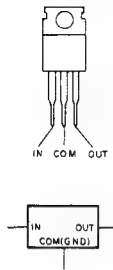
INPUT	ENABLE	OUTPUT
D	DE	A B
1	1	1 0
0	1	0 1
X	0	Hi-Z Hi-Z

— RECEIVER —

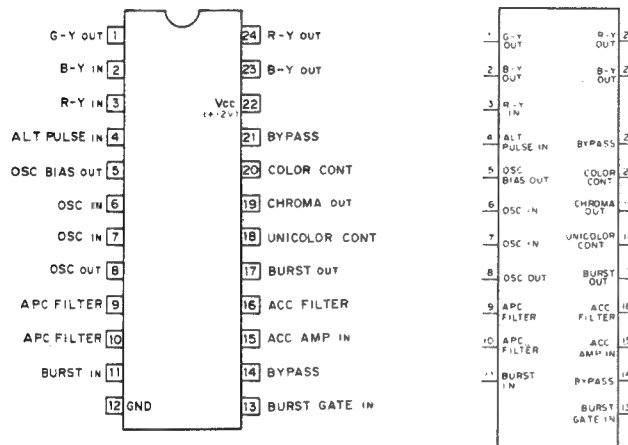
DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	RE	R
V <sub>IO</sub> > 0.2V	0	1
-0.2V < V <sub>IO</sub> < 0.2V	0	?
V <sub>IO</sub> < -0.2V	0	0
X	1	Hi-Z

1 : HIGH LEVEL  
0 : LOW LEVEL  
X : DON'T CARE  
Hi-Z : HIGH IMPEDANCE  
? : INDETERMINATE

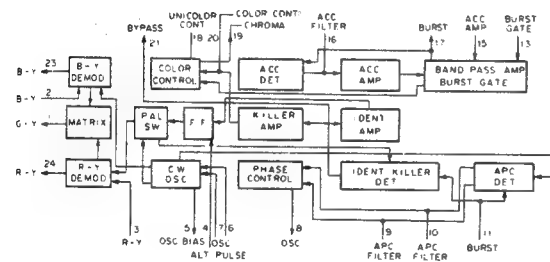
TA7812S  
POSITIVE VOLTAGE REGULATOR (0.5A)  
— SIDE VIEW —



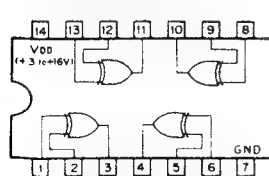
TA7193P (TOSHIBA)  
TV CHROMA PROCESS (PAL)  
— TOP VIEW —



OUT; OUTPUT  
IN; INPUT  
CONT; CONTROL



TC4030BP (TOSHIBA)  
TC4030BPHB (TOSHIBA)  
C-MOS EXCLUSIVE OR GATE  
— TOP VIEW —

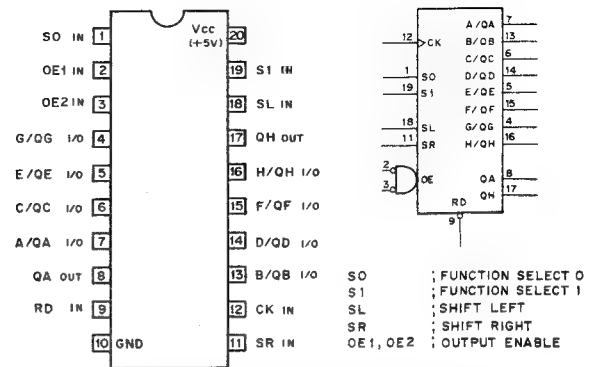


$$Y = A \oplus B = A \cdot \bar{B} + \bar{A} \cdot B$$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0: LOW LEVEL  
1: HIGH LEVEL

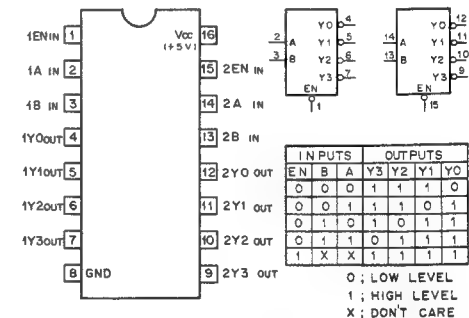
TC74HC299FA  
TTL 8-BIT UNIVERSAL SHIFT/STORAGE REGISTER  
— TOP VIEW —



MODE	INPUTS								INPUTS/OUTPUTS								OUTPUTS	
	RD	CK	SO	SI	OE1	OE2	SL	SR	QA	QB	QC	QD	QE	QF	QG	QH	QA	QH
CLEAR	0	X	0	X	0	0	X	X	0	0	0	0	0	0	0	0	0	0
HOLD	1	0	X	0	0	0	X	X	QA	QB	QC	QD	QE	QF	QG	QH	QA	QH
SHIFT RIGHT	1	1	0	0	0	0	1	0	QA	QB	QC	QD	QE	QF	QG	QH	QA	QH
SHIFT LEFT	1	1	0	0	0	0	0	1	QA	QB	QC	QD	QE	QF	QG	QH	QA	QH
LOAD	1	1	1	1	X	X	X	X	a	b	c	d	e	f	g	h	a	h
OUTPUT ENABLE	X	X	X	X	X	1	X	X	HIGH-IMPEDANCE (INTERNAL LOGIC IS NOT AFFECTED)								QA	QH

a---h=The level of the steady-state input of inputs A through H respectively  
0; LOW LEVEL  
1; HIGH LEVEL  
X; DON'T CARE

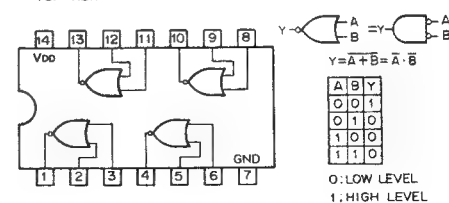
TC74HCT139AF  
TTL 2-TO-4-LINE DECODER/DEMULPLEXER  
— TOP VIEW —



INPUTS				OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0	
0	0	0	1	1	1	0	
0	0	1	1	1	0	1	
0	1	0	1	0	1	1	
0	1	1	0	1	1	1	
1	X	X	1	1	1	1	

0; LOW LEVEL  
1; HIGH LEVEL  
X; DON'T CARE

TC74HCT02AF (TOSHIBA) FLAT PACKAGE  
C-MOS QUAD 2-INPUT NOR GATES  
— TOP VIEW —

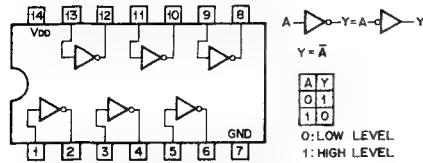


NOTE:

TYPE	VDD
TC74AC02F	+2 to +5.5V
74ACT02SJ TC74ACT02F	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

0: LOW LEVEL  
1: HIGH LEVEL

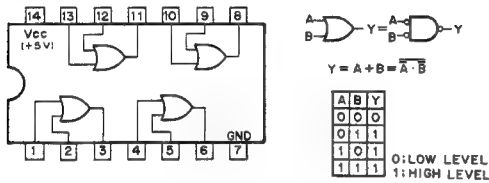
TC74HCT04AF (TOSHIBA) FLAT PACKAGE



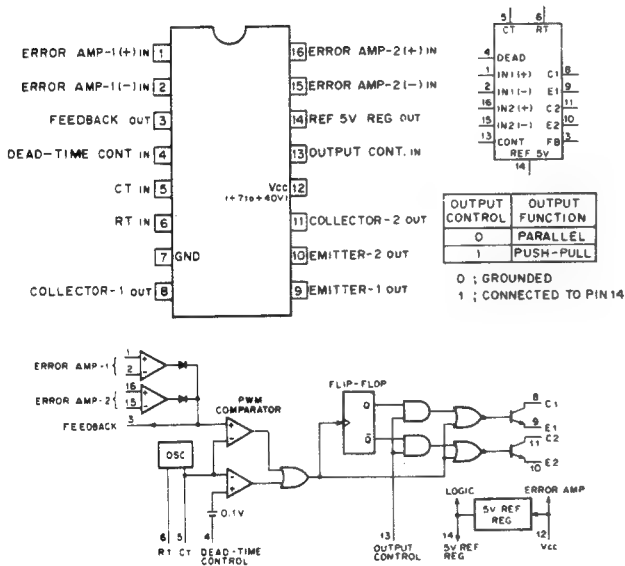
NOTE:

TYPE	V <sub>DD</sub>
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

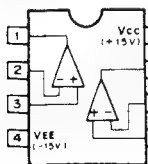
TC74HCT32FA  
TTL 2-INPUT POSITIVE-OR GATE  
— TOP VIEW —



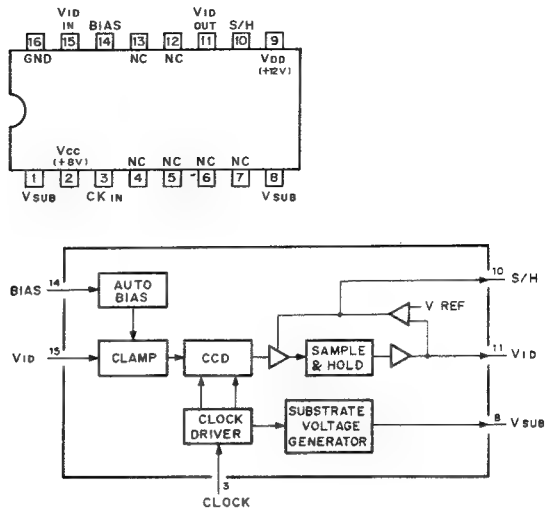
TL494CN (TI)  
PWM POWER CONTROL  
— TOP VIEW —



TL082ACP  
TL082M  
OPERATIONAL AMPLIFIER  
(J FET-INPUT)  
— TOP VIEW —

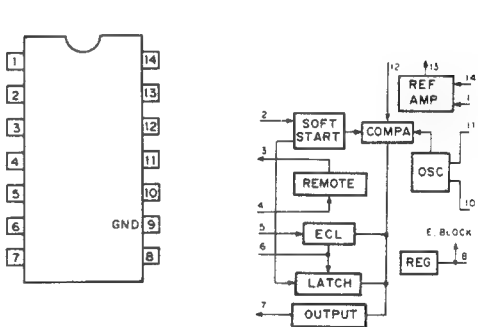


TL8608AP (TOSHIBA)  
N-CH CCD ANALOG PROCESSING UNIT  
— TOP VIEW —

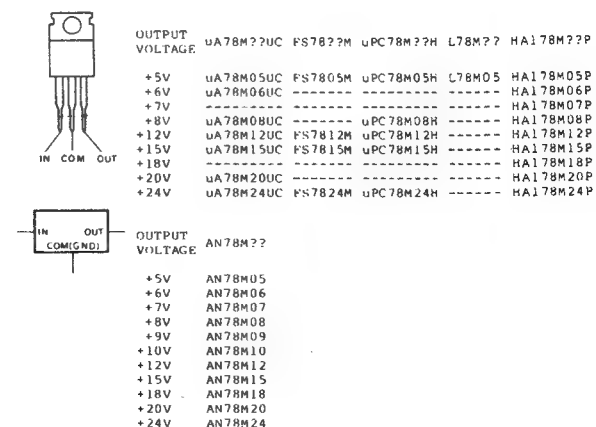


TOP VIEW  
TX-429M

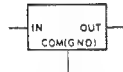
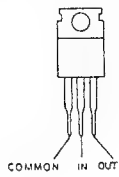
μPC1394C (NEC)  
CONTROLLER OF SWITCHING MODE POWER SUPPLY  
— TOP VIEW —



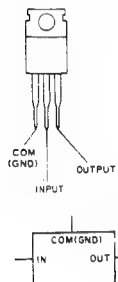
μPC78M12H (NEC)  
POSITIVE VOLTAGE REGULATOR (0.5A)  
— SIDE VIEW —



UPC79M12H  
NEGATIVE VOLTAGE REGULATOR (0.5A)  
— SIDE VIEW —

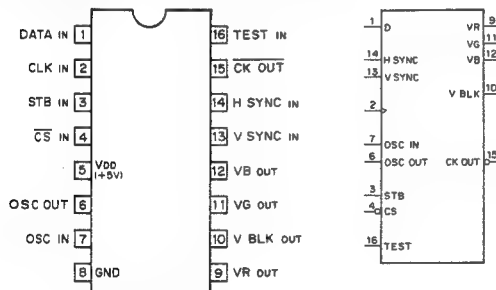


UPC7912H (NEC)  
NEGATIVE VOLTAGE REGULATOR (1A)  
— SIDE VIEW —

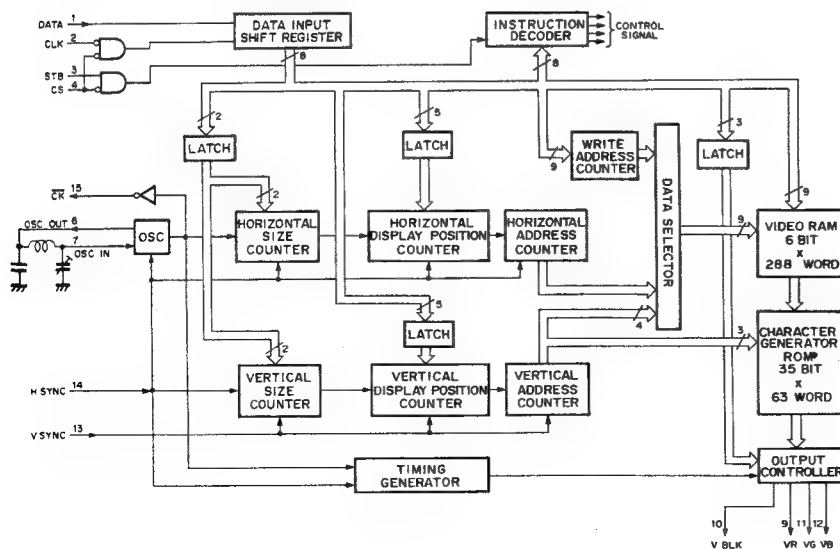


OUTPUT VOLTAGE	AN79??	FS79??	UA79??UC	UPC79??H	MC79??CT
-2V					MC7902CT
-5V	AN7905	FS7905	UA7905UC	UPC7905H	MC7905CT
-5.2V					MC7905.2CT
-6V	AN7906		UA7906UC		MC7906CT
-7V	AN7907				
-8V	AN7908		UA7908UC	UPC7908H	MC7908CT
-9V	AN7909				
-10V	AN7910				
-12V	AN7912		UA7912UC	UPC7912H	MC7912CT
-15V	AN7915		UA7915UC	UPC7915H	MC7915CT
-18V	AN7918		UA7918UC	UPC7918H	MC7918CT
-20V	AN7920				
-24V	AN7924		UA7924UC	UPC7924H	MC7924CT

UPD6142G-101 (NEC) FLAT PACKAGE  
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY  
— TOP VIEW —



D: DATA INPUT  
CK OUT: EQUAL TO OUTPUT OF OSC OUT  
CLK: CLOCK INPUT  
CS: CHIP SELECT INPUT  
H SYNC: H SYNC INPUT  
OSC IN, OUT: EXTERNAL TERMINAL FOR OSC  
STB: STROBE INPUT  
TEST: TEST CLOCK INPUT  
VB: BLUE CHARACTER DATA OUTPUT  
V BLK: V BLANKING OUTPUT  
VG: GREEN CHARACTER DATA OUTPUT  
VR: RED CHARACTER DATA OUTPUT  
V SYNC: V SYNC INPUT



2SA733  
2SA844  
2SA1091  
2SC2551  
2SC2878  
2SC3068



2SA812  
2SA1162  
2SA1226  
2SC1623  
2SC2757  
2SC3624A  
DTA144EK  
DTC144EK



2SA979  
2SA1306



2SA1048  
2SA1115  
2SC2698  
2SC403SP  
DTA124ES  
DTA144ES  
DTC124ES  
DTC143TS  
DTC144ES  
XDA124ES  
XDA144ES  
XDC124ES  
XDC144ES



2SA1142  
2SA1406  
2SA1407  
2SC3600



2SA1175  
2SC2785



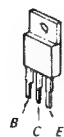
2SA1488



2SB734  
2SD774



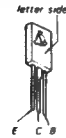
2SB858  
2SB861  
2SC3675  
2SD1134



2SC2555



2SC2688  
2SC2752  
2SC3209  
2SC3298  
2SD669A



2SD1556



2SC3851



2SD789



2SK381  
2SK514



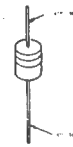
2SK523



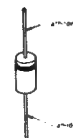
1S2835  
1S2836  
1S2837  
MA152WK



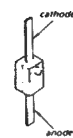
1SS119  
1S83  
WG713A



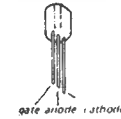
1SS148  
10E2  
GP08D  
RD10EB  
RD12EB  
RD15EB  
RD15ES  
RD3.0EB  
RD3.9EB  
RD3.9ES  
RD4.3EB  
RD5.6EB  
RD5.6ES  
RD6.2EB  
RD6.8EB  
RD6.8ES  
RD7.5ES  
RD8.2ES  
RD9.1EB  
RD9.1ES  
RU-3AM



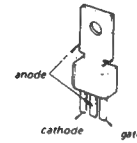
1T25



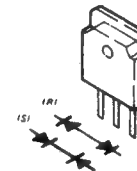
CR02AM-4  
CR02AM-8



CR3CM-8



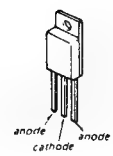
CTU-38R  
CTU-38S



ERB44-06  
ERB81-004  
ERC04-24S  
ERD28-04S  
ERD28-08S  
RH-1  
RH-1A  
RU-1A  
RU-1C  
SIB01-02



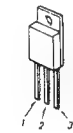
ESAC25-04C



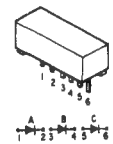
ESAC25-04D  
ESAC25-04N



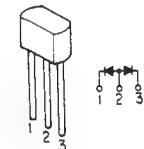
ESAC31-02D



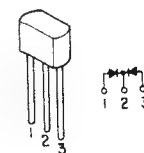
LT9010H



MC911

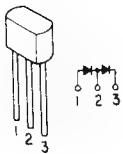


MC921

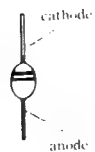




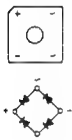
**MC932**



**V11N**



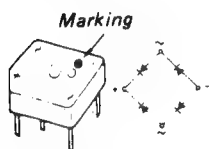
**RB406N**



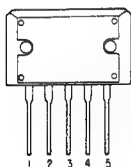
**RD5.6M**  
**RD7.5M**



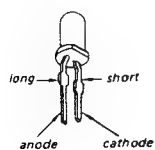
**S3WB60Z**



**STR8124**



**GL3HY3**  
**TLG124A**  
**TLR124**  
**TLY124**





## SECTION 6 EXPLODED VIEWS

### NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

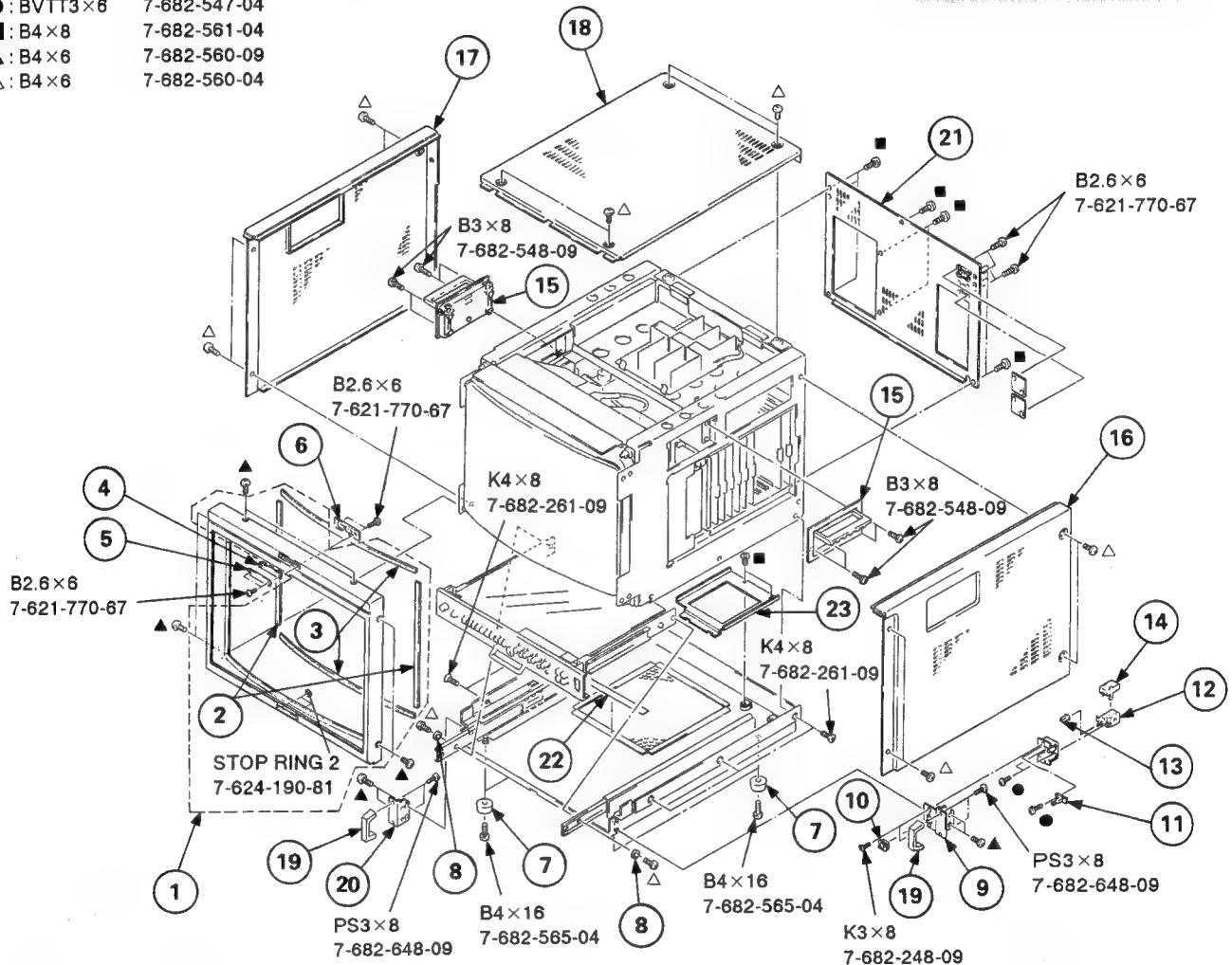
- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

### 6-1. BEZEL AND COVERS

- : BVTT3×6 7-682-547-04
- : B4×8 7-682-561-04
- ▲ : B4×6 7-682-560-09
- △ : B4×6 7-682-560-04

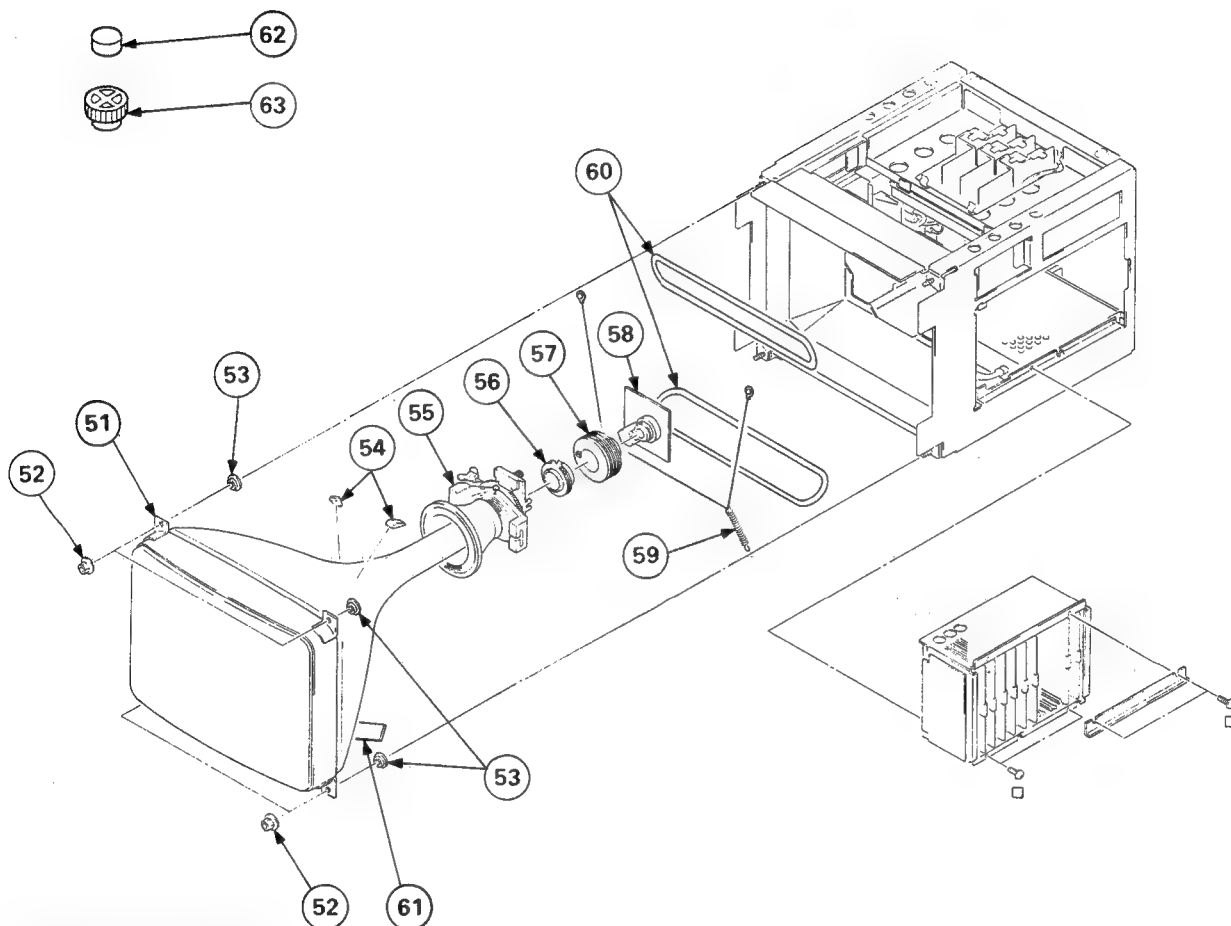



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4379-412-1	BEZEL ASSY	2, 3	12	A-1-570-052-12	SWITCH, PUSH (AC POWER) (1 KEY)	
2	4-308-878-XX	CUSHION (B), BEZEL		13	4-374-839-11	BUTTON (A)	
3	4-308-878-XX	CUSHION (A), CRT		14	4-373-038-01	COVER, SWITCH, POWER	
4	*4-386-839-01	PLATE, TALLY		15	X-3642-018-0	HANDLE ASSY	
5	*4-386-840-01	PLATE (B), TALLY		16	*4-386-832-01	COVER (RIGHT)	
6	*1-623-002-11	XB BOARD		17	*4-386-833-01	COVER (LEFT)	
7	X-483-620-29	FOOT		18	*4-386-831-01	COVER (UPPER)	
8	*4-379-499-01	SPACER		19	*4-353-706-00	HANDLE	
9	*X-4379-408-1	PANEL ASSY, POWER SWITCH		20	*4-386-808-01	BRACKET (LEFT), HANDLE	
10	4-379-423-01	ESCUTCHEON (A)		21	*4-386-811-03	COVER, REAR	
11	*1-617-893-11	Y BOARD		22	4-372-556-01	SHEET, BLOTING	
				23	4-386-814-03	BRACKET, POWER	


## 6-2. PICTURE TUBE







□: B3×10

7-682-549-04



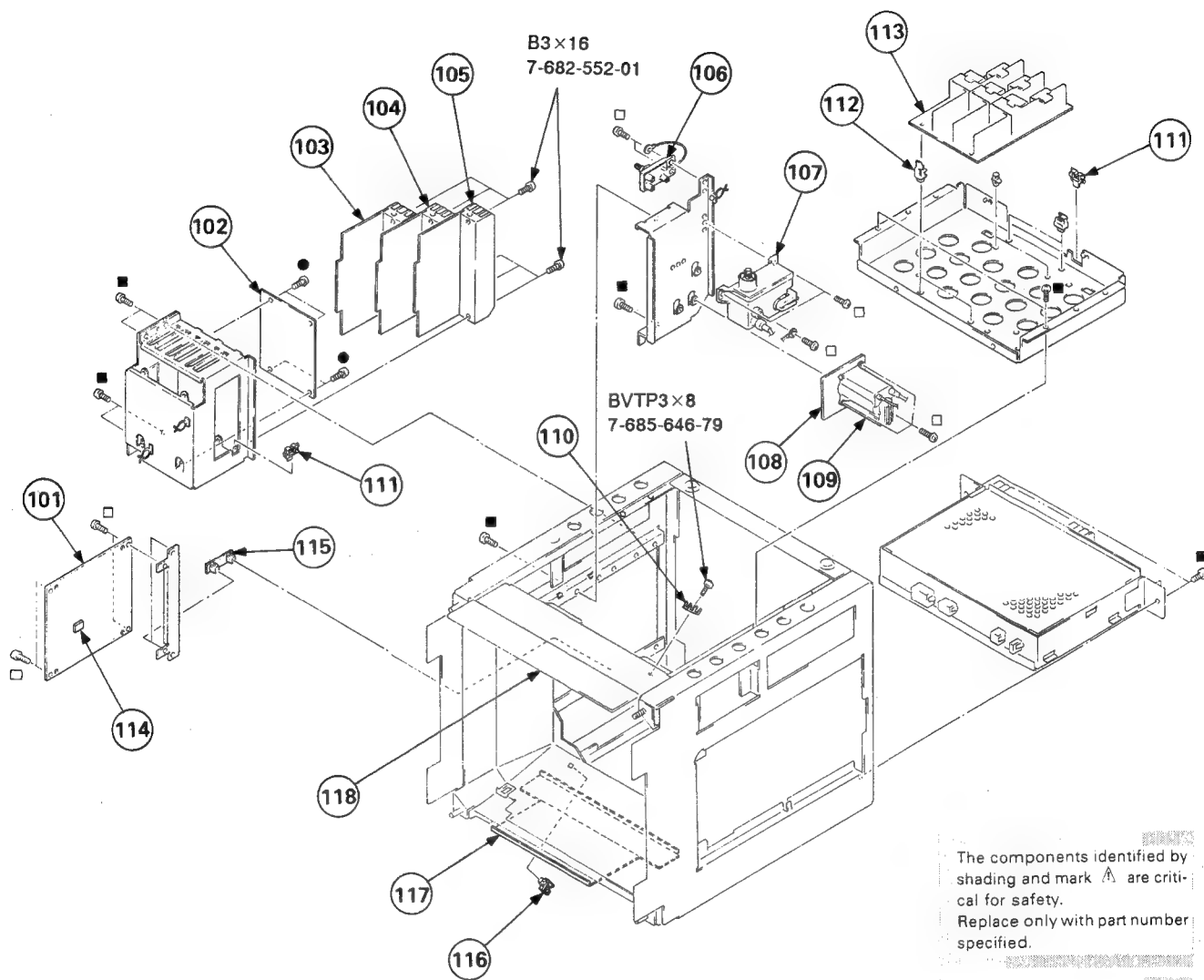
The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
51	 8-733-053-05	CRT SD-112 (M49JJP20X) (BVP-1911 ONLY)		57	 1-452-117-31	CRT NECK ASSY	
51	 8-733-054-05	CRT SD-112 (M49JJP21X) (BVP-2011P ONLY)		58	*1-617-889-11	C BOARD	
52	4-306-034-00	FLANGE NUT, (B) 5MM		59	4-303-774-XX	SPRING	
53	4-348-567-00	WASHER, CRT POSITION					
54	3-703-961-01	SPACER, DY		60	 1-426-328-11	COIL, DEGAUSSING	
55	 1-451-287-21	DEFLECTION YOKE (Y14FAA)		61	3-831-441-11	CLOTH, BLOTING	
56	 1-452-261-22	CRT NECK ASSY (362)		62	1-452-032-00	MAGNET, DISK; 10MM φ	
				63	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM φ	

## 6-3. CHASSIS

- : BVTT3×6 7-682-547-04  
 ■: B4×8 7-682-561-04  
 □: B3×10 7-682-549-04



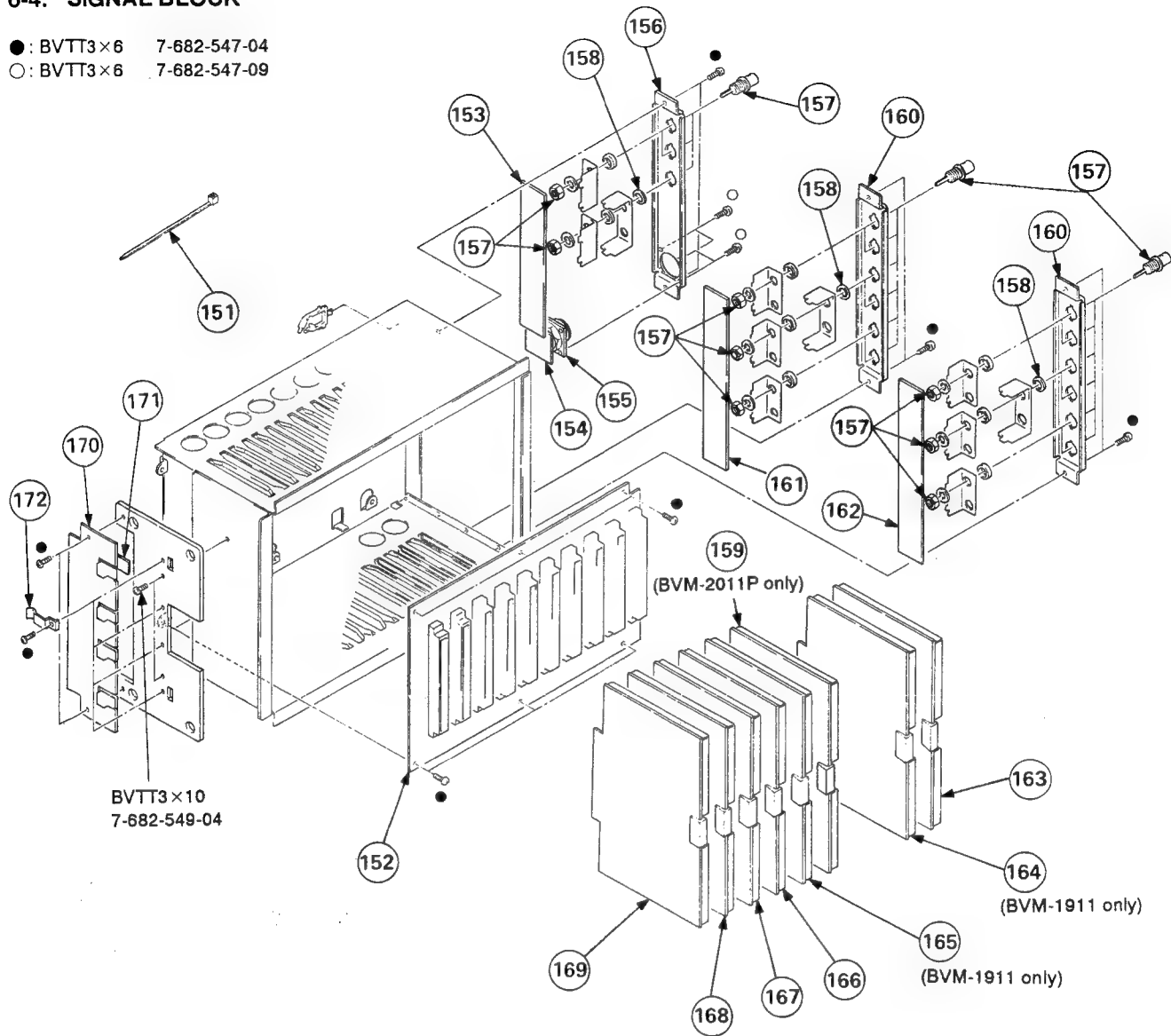
The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
101	*A-1345-981-A	DB BOARD, COMPLETE		110	*4-309-624-00	TERMINAL, EARTH	
102	*1-647-911-11	TA BOARD		111	*3-646-071-00	HOLDER, WIRE	
103	*A-1346-029-A	EA BOARD, COMPLETE		112	*3-703-141-00	HOLDER, PCB	
104	*A-1345-731-A	EB BOARD, COMPLETE		113	*A-1135-464-A	BK BOARD, COMPLETE	
105	*A-1394-128-A	PA BOARD, COMPLETE		114	9-911-841-XX	CUSHION	
106	$\Delta$ .1-237-165-12	RESISTOR ASSY, HIGH-VOLTAGE		115	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
107	$\Delta$ .1-453-103-32	HIGH-VOLTAGE BLOCK (HB-203(B))		116	*4-314-320-00	HOLDER, WIRE	
108	*1-617-891-21	PB BOARD		117	*4-391-234-03	STAY, UNDER	
109	$\Delta$ .1-439-382-21	TRANSFORMER ASSY, FLYBACK		118	*4-386-819-02	STAY, FRONT	

## 6-4. SIGNAL BLOCK

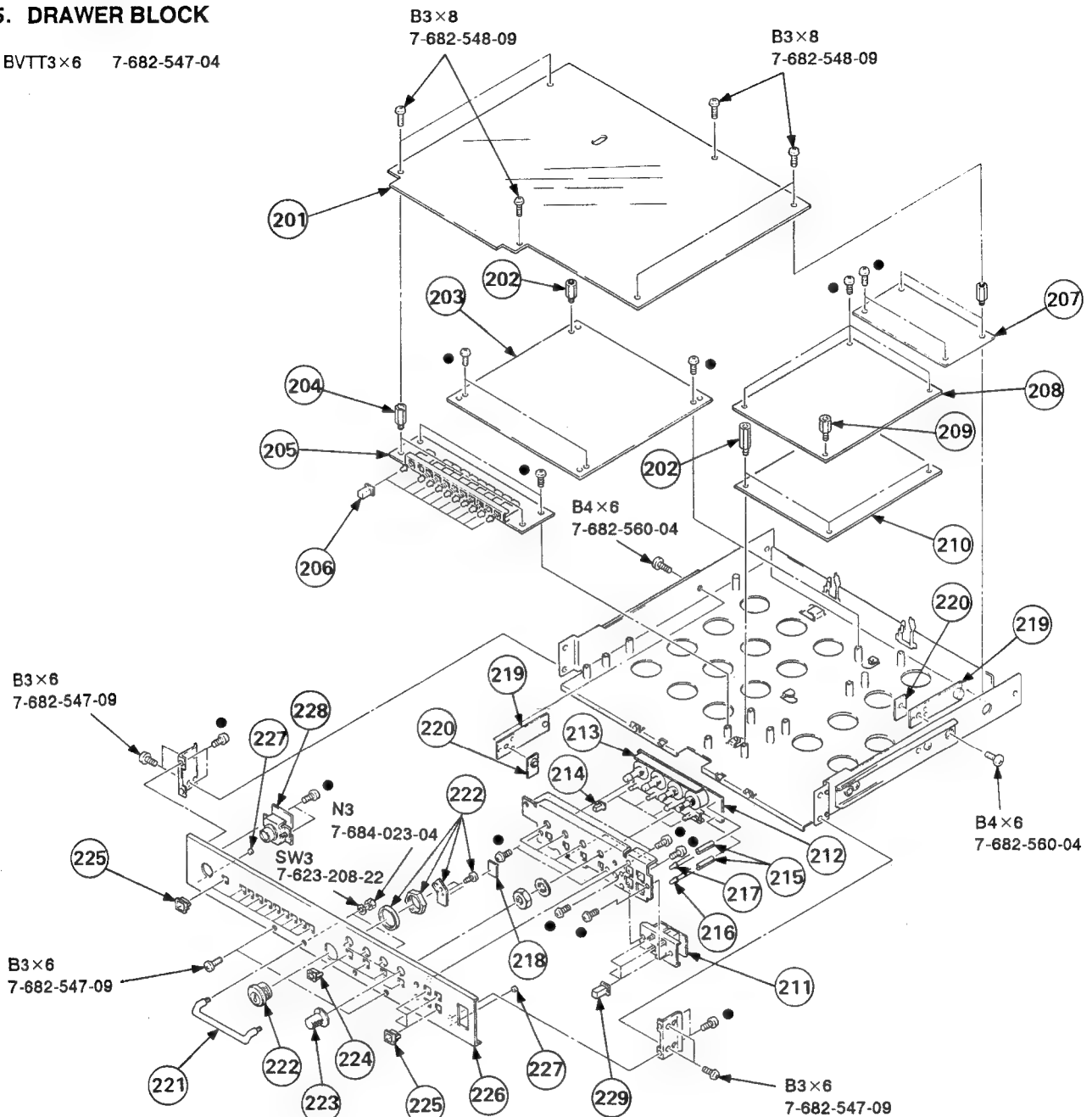
●: BVTT3×6 7-682-547-04  
○: BVTT3×6 7-682-547-09



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
151	*3-337-402-01	BAND, BINDING		161	*1-618-786-11	QB BOARD	
152	*A-1390-344-A	TB BOARD, COMPLETE		162	*1-617-895-11	QA BOARD	
153	*1-627-678-11	W BOARD		163	*A-1135-355-A	BA BOARD, COMPLETE	
154	*1-627-677-11	V BOARD		164	*A-1135-606-B	BT BOARD, COMPLETE (BVM 1911 ONLY)	
155	1-563-265-11	CONNECTOR, MULTIPLE IOP		165	*A-1135-357-A	BC BOARD, COMPLETE (BVM 1911 ONLY)	
156	*4-391-220-01	PANEL (C), CONNECTOR		166	*A-1135-358-A	BG BOARD, COMPLETE	
157	1-565-791-11	CONNECTOR, BNC 1P		167	*A-1135-359-A	BH BOARD, COMPLETE	
158	*4-379-404-01	INSULATOR, BNC		168	*A-1135-360-A	BI BOARD, COMPLETE	
159	*A-1135-391-A	BD BOARD, COMPLETE (BVM 2011P ONLY)		169	*A-1135-361-A	BJ BOARD, COMPLETE	
160	*4-379-439-01	PANEL (A), CONNECTOR		170	*1-617-885-12	GC BOARD	
				171	4-370-970-01	SPACER, TR	
				172	*4-363-404-00	HOLDER, IC	

## 6-5. DRAWER BLOCK

●: BVTT3×6 7-682-547-04



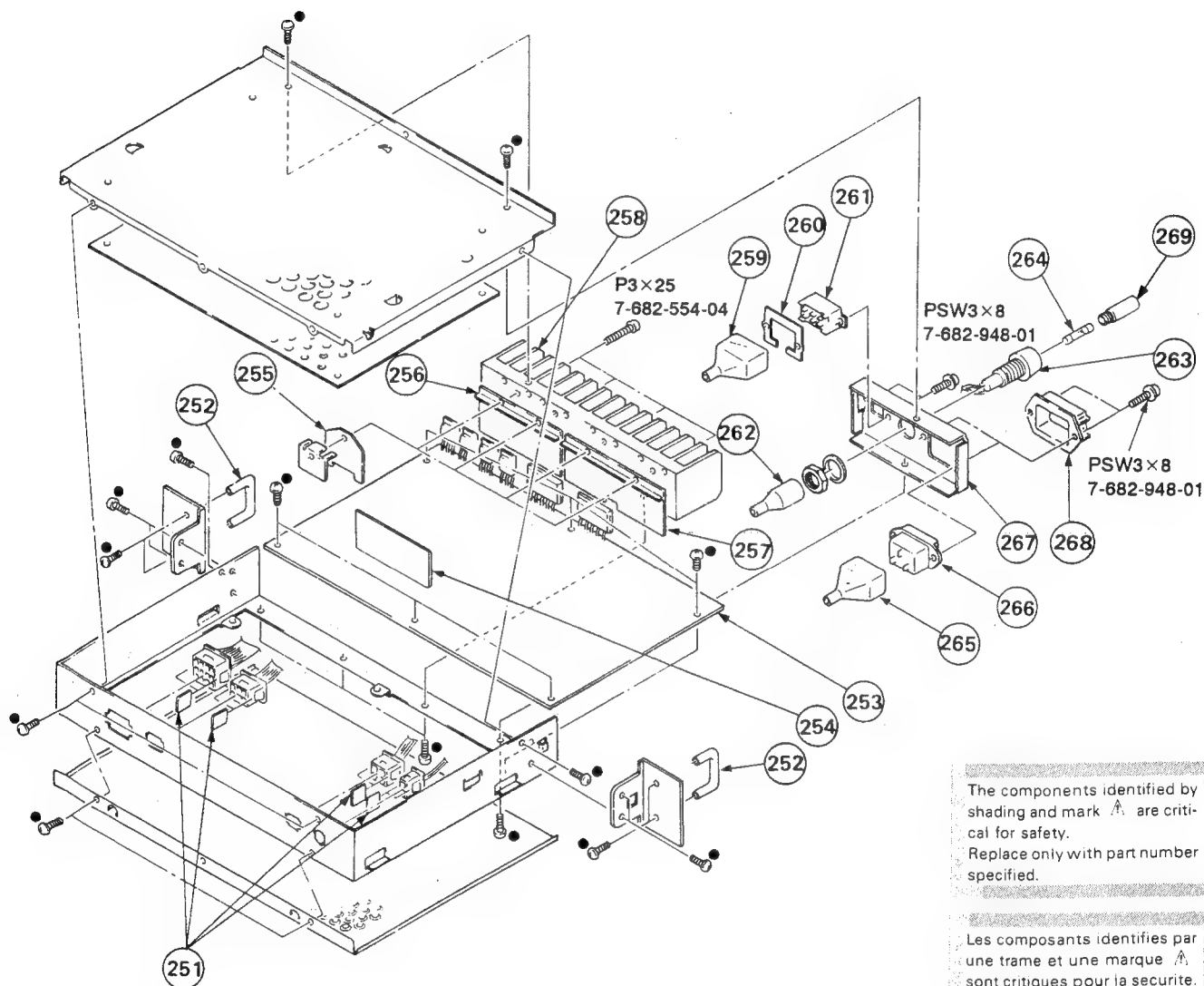
REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
201	*4-039-981-01	COVER, PC BOARD		216	8-719-938-68	DIODE TLY124	
202	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON		217	8-719-812-41	DIODE TLR124	
203	*A-1345-982-A	DA BOARD, COMPLETE		218	4-337-209-11	PROTECTOR, SCRATCH	
204	3-897-313-01	BOSS (17.2), RELAY		219	*X-4379-407-1	STOPPER ASSY	
205	*1-617-890-11	HA BOARD		220	*4-386-844-01	NUT, PLATE	
206	4-374-839-01	BUTTON (A)		221	4-386-802-01	HANDLE, DRAWER	
207	*A-1341-408-A	DC BOARD, COMPLETE		222	4-378-917-01	LOCK, CYLINDER	
208	A-1371-895-A	HY BOARD, COMPLETE		223	X-3673-635-0	KNOB (1) ASSY, CONTROL	
209	*3-711-018-01	STAND OFF-BRAKE BAND GUIDE		224	4-379-424-01	ESCUTCHEON (B)	
210	A-1371-896-A	HZ BOARD, COMPLETE		225	4-379-423-01	ESCUTCHEON (A)	
211	*1-647-258-11	HX BOARD		226	4-386-822-11	PANEL, CONTROL	
212	*1-647-257-11	HW BOARD		227	4-911-672-01	FELT, COVER	
213	*1-627-682-11	HH BOARD		228	1-941-422-15	CONNECTOR ASSY (ROUND TYPE) 12P	
214	4-379-422-01	BUTTON (B)		229	4-039-982-01	BUTTON (U)	
215	*4-026-910-00	HOLDER, LED					



## 6-6. POWER BLOCK

●: BVTT3×6 7-682-547-04

6. EXPLODED VIEWS



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
251	3-675-469-00	SPACER, SOLENOID		260	*4-379-409-01	NUT, PLATE	
252	4-379-421-01	HANDLE, DRAWER		261	A.1-570-173-22	SWITCH, VOLTAGE CHANGE	
253	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1911 ONLY)	254	262	*4-393-031-01	COVER, FUSE HOLDER	
253	*A-1316-090-A	GA BOARD, COMPLETE (BVM-2011P ONLY)	254	263	1-533-167-21	HOLDER, FUSE	
254	*1-627-679-11	GB BOARD		264	A.1-532-746-11	FUSE, GLASS TUBE (4A/125V)	
255	*4-379-408-01	INSULATOR (G3)		265	*4-601-466-11	COVER, 3P INLET	
256	4-379-410-01	SPACER (G2), POLISHING		266	A.1-580-375-11	INLET 3P	
257	4-379-403-01	SPACER (G1), POLISHING		267	*4-379-430-01	PANEL, POWER	
258	*4-374-706-00	HEAT SINK (TR)		268	2-990-241-02	HOLDER (A), PLUG	
259	*4-371-879-02	COVER, AC SELECT		269	1-533-168-21	HOLDER, FUSE	

# SECTION 7

## ELECTRICAL PARTS LIST

**XB BA**

### NOTE:

The components identified by shading and mark **Δ** are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

### RESISTORS

• All resistors are in ohms  
• F : nonflammable

When indicating parts by reference number, please include the board name.

### CAPACITORS

• MF :  $\mu$ F, PF :  $\mu$ F

### COILS

• MMH : mH, UH :  $\mu$ H

• The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-623-002-11	XB BOARD *****		C16	1-126-101-11	ELECT 100MF	20% 16V
				C17	1-126-101-11	ELECT 100MF	20% 16V
				C18	1-124-915-11	ELECT 10MF	20% 16V
				C19	1-124-915-11	ELECT 10MF	20% 16V
				C20	1-101-004-00	CERAMIC 0.01MF	50V
		<DIODE>		C21	1-101-006-00	CERAMIC 0.047MF	50V
D1	8-719-901-49	DIODE LT-9010H		C31	1-101-004-00	CERAMIC 0.01MF	50V
D2	8-719-901-49	DIODE LT-9010H		C32	1-124-915-11	ELECT 10MF	20% 16V
		*****		C33	1-124-915-11	ELECT 10MF	20% 16V
				C34	1-124-915-11	ELECT 10MF	20% 16V
	*A-1135-355-A	BA BOARD, COMPLETE *****		C35	1-124-915-11	ELECT 10MF	20% 16V
				C36	1-124-915-11	ELECT 10MF	20% 16V
	*4-353-708-00	HOOK, FINGER		C37	1-124-915-11	ELECT 10MF	20% 16V
	8-729-119-78	TRANSISTOR 2SC2785-HFE		C38	1-124-915-11	ELECT 10MF	20% 16V
				C39	1-101-004-00	CERAMIC 0.01MF	50V
		<CONNECTOR>		C51	1-126-103-11	ELECT 470MF	20% 16V
BA1	*1-566-054-11	PIN, CONNECTOR 2P		C52	1-126-101-11	ELECT 100MF	20% 16V
BA2	*1-566-054-11	PIN, CONNECTOR 2P		C53	1-126-101-11	ELECT 100MF	20% 16V
BA3	*1-566-054-11	PIN, CONNECTOR 2P		C54	1-126-101-11	ELECT 100MF	20% 16V
BA4	*1-566-054-11	PIN, CONNECTOR 2P		C55	1-126-101-11	ELECT 100MF	20% 16V
BA5	*1-566-054-11	PIN, CONNECTOR 2P					
BA6	*1-566-054-11	PIN, CONNECTOR 2P		C56	1-126-101-11	ELECT 100MF	20% 16V
				C57	1-126-101-11	ELECT 100MF	20% 16V
				C71	1-101-004-00	CERAMIC 0.01MF	50V
				C72	1-101-004-00	CERAMIC 0.01MF	50V
				C73	1-101-004-00	CERAMIC 0.01MF	50V
		<COMPOSITION CIRCUIT BLOCK>		C74	1-101-004-00	CERAMIC 0.01MF	50V
C1	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C75	1-101-004-00	CERAMIC 0.01MF	50V
C2	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C76	1-101-004-00	CERAMIC 0.01MF	50V
C3	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C77	1-101-004-00	CERAMIC 0.01MF	50V
C4	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C101	1-102-038-00	CERAMIC 0.001MF	500V
C5	1-233-030-11	COMPOSITION CIRCUIT BLOCK					
C6	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C102	1-124-915-11	ELECT 10MF	20% 16V
C7	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C103	1-102-951-00	CERAMIC 15PF	5% 50V
				C104	1-123-379-00	ELECT 0.47MF	20% 50V
				C201	1-102-038-00	CERAMIC 0.001MF	500V
				C202	1-124-915-11	ELECT 10MF	20% 16V
		<CAPACITOR>		C203	1-102-951-00	CERAMIC 15PF	5% 50V
C1	1-124-910-11	ELECT 47MF	20% 16V	C204	1-123-379-00	ELECT 0.47MF	20% 50V
C2	1-124-910-11	ELECT 47MF	20% 16V	C301	1-102-038-00	CERAMIC 0.001MF	500V
C3	1-124-910-11	ELECT 47MF	20% 16V	C302	1-124-915-11	ELECT 10MF	20% 16V
C4	1-124-915-11	ELECT 10MF	20% 16V	C303	1-102-965-00	CERAMIC 39PF	5% 50V
C5	1-124-910-11	ELECT 47MF	20% 16V				
C6	1-124-910-11	ELECT 47MF	20% 16V	C304	1-123-379-00	ELECT 0.47MF	20% 50V
C7	1-124-910-11	ELECT 47MF	20% 16V	C305	1-102-947-00	CERAMIC 10PF	0.5PF 50V
C8	1-124-910-11	ELECT 47MF	20% 16V	C306	1-102-942-00	CERAMIC 5PF	1PF 50V
C9	1-101-004-00	CERAMIC 0.01MF	50V	C401	1-102-038-00	CERAMIC 0.001MF	500V
C10	1-101-004-00	CERAMIC 0.01MF	50V	C402	1-124-915-11	ELECT 10MF	20% 16V
C11	1-126-103-11	ELECT 470MF	20% 16V	C403	1-102-951-00	CERAMIC 15PF	5% 50V
C12	1-126-101-11	ELECT 100MF	20% 16V	C404	1-123-379-00	ELECT 0.47MF	20% 50V
C13	1-126-101-11	ELECT 100MF	20% 16V	C501	1-102-038-00	CERAMIC 0.001MF	500V
C14	1-126-101-11	ELECT 100MF	20% 16V	C502	1-124-915-11	ELECT 10MF	20% 16V
C15	1-126-101-11	ELECT 100MF	20% 16V	C503	1-102-951-00	CERAMIC 15PF	5% 50V
				C504	1-123-379-00	ELECT 0.47MF	20% 50V

BA

REF.NO.	PART NO.	DESCRIPTION				REMARK	REF.NO.	PART NO.	DESCRIPTION				REMARK
C601	1-102-038-00	CERAMIC	0.001MF			500V	Q6	8-729-900-65	TRANSISTOR	DTA144ES			
C602	1-124-915-11	ELECT	10MF	20%		16V	Q101	8-729-266-82	TRANSISTOR	2SC2668-0			
C603	1-102-951-00	CERAMIC	15PF	5%		50V	Q102	8-729-266-82	TRANSISTOR	2SC2668-0			
C604	1-123-379-00	ELECT	0.47MF	20%		50V	Q103	8-729-266-82	TRANSISTOR	2SC2668-0			
C701	1-102-976-00	CERAMIC	180PF	5%		50V	Q104	8-729-384-48	TRANSISTOR	2SA844-E			
C702	1-102-947-00	CERAMIC	10PF	0.5PF		50V	Q105	8-729-266-82	TRANSISTOR	2SC2668-0			
C703	1-124-915-11	ELECT	10MF	20%		16V	Q201	8-729-266-82	TRANSISTOR	2SC2668-0			
C704	1-124-910-11	ELECT	47MF	20%		16V	Q202	8-729-266-82	TRANSISTOR	2SC2668-0			
C705	1-136-153-00	FILM	0.01MF	5%		50V	Q203	8-729-266-82	TRANSISTOR	2SC2668-0			
C706	1-124-791-11	ELECT	1MF	20%		50V	Q204	8-729-384-48	TRANSISTOR	2SA844-E			
C707	1-123-369-00	ELECT	4.7MF	20%		25V	Q205	8-729-266-82	TRANSISTOR	2SC2668-0			
C708	1-124-915-11	ELECT	10MF	20%		16V	Q301	8-729-266-82	TRANSISTOR	2SC2668-0			
C709	1-102-973-00	CERAMIC	100PF	5%		50V	Q302	8-729-266-82	TRANSISTOR	2SC2668-0			
C710	1-130-481-00	MYLAR	0.0068MF	5%		50V	Q303	8-729-266-82	TRANSISTOR	2SC2668-0			
C711	1-136-155-00	FILM	0.015MF	5%		50V	Q304	8-729-384-48	TRANSISTOR	2SA844-E			
C712	1-130-471-00	MYLAR	0.001MF	5%		50V	Q305	8-729-266-82	TRANSISTOR	2SC2668-0			
C713	1-124-791-11	ELECT	1MF	20%		50V	Q401	8-729-266-82	TRANSISTOR	2SC2668-0			
C714	1-102-973-00	CERAMIC	100PF	5%		50V	Q402	8-729-266-82	TRANSISTOR	2SC2668-0			
C715	1-101-361-00	CERAMIC	150PF	5%		50V	Q403	8-729-266-82	TRANSISTOR	2SC2668-0			
C716	1-136-153-00	FILM	0.01MF	5%		50V	Q404	8-729-384-48	TRANSISTOR	2SA844-E			
C717	1-102-973-00	CERAMIC	100PF	5%		50V	Q405	8-729-266-82	TRANSISTOR	2SC2668-0			
<TRIMMER>							Q501	8-729-266-82	TRANSISTOR	2SC2668-0			
CV101	1-141-179-12	CAP, VAR, TRIMMER					Q502	8-729-266-82	TRANSISTOR	2SC2668-0			
CV102	1-141-260-00	TRIMAR, CERAMIC					Q503	8-729-266-82	TRANSISTOR	2SC2668-0			
CV201	1-141-179-12	CAP, VAR, TRIMMER					Q504	8-729-384-48	TRANSISTOR	2SA844-E			
CV202	1-141-260-00	TRIMAR, CERAMIC					Q505	8-729-266-82	TRANSISTOR	2SC2668-0			
CV401	1-141-179-12	CAP, VAR, TRIMMER					Q601	8-729-266-82	TRANSISTOR	2SC2668-0			
CV402	1-141-260-00	TRIMAR, CERAMIC					Q602	8-729-266-82	TRANSISTOR	2SC2668-0			
CV501	1-141-179-12	CAP, VAR, TRIMMER					Q603	8-729-266-82	TRANSISTOR	2SC2668-0			
CV502	1-141-260-00	TRIMAR, CERAMIC					Q604	8-729-384-48	TRANSISTOR	2SA844-E			
CV601	1-141-179-12	CAP, VAR, TRIMMER					Q605	8-729-266-82	TRANSISTOR	2SC2668-0			
CV602	1-141-260-00	TRIMAR, CERAMIC					Q701	8-729-119-76	TRANSISTOR	2SA1175-HFE			
<DIODE>							Q702	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D1	8-719-109-63	DIODE RD3.0ESB2					Q703	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D2	8-719-000-06	DIODE MC921					Q704	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D4	8-719-000-04	DIODE MC911					Q705	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D701	8-719-911-19	DIODE ISS119					Q706	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D702	8-719-109-75	DIODE RD4.3ESB2					Q707	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D703	8-719-911-19	DIODE ISS119					Q708	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D704	8-719-911-19	DIODE ISS119					Q709	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D705	8-719-911-19	DIODE ISS119					Q710	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D706	8-719-911-19	DIODE ISS119					Q711	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D707	8-719-911-19	DIODE ISS119					Q712	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D708	8-719-911-19	DIODE ISS119					Q713	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D709	8-719-911-19	DIODE ISS119					Q714	8-729-119-78	TRANSISTOR	2SC2785-HFE			
D710	8-719-911-19	DIODE ISS119					Q715	8-729-800-10	TRANSISTOR	2SC3068			
<IC>							Q716	8-729-119-78	TRANSISTOR	2SC2785-HFE			
IC1	8-759-208-94	IC CX-894					Q717	8-729-119-76	TRANSISTOR	2SA1175-HFE			
IC2	8-759-208-94	IC CX-894					<RESISTOR>						
IC3	8-759-140-53	IC UPD4053BC					R1	1-249-405-11	CARBON	100	5%	1/4W	
<TRANSISTOR>							R2	1-249-405-11	CARBON	100	5%	1/4W	
Q1	8-729-900-89	TRANSISTOR DTC144ES					R3	1-249-405-11	CARBON	100	5%	1/4W	
Q2	8-729-384-48	TRANSISTOR 2SA844-E					R4	1-249-437-11	CARBON	47K	5%	1/4W	
Q3	8-729-900-89	TRANSISTOR DTC144ES					R5	1-249-405-11	CARBON	100	5%	1/4W	
Q4	8-729-900-89	TRANSISTOR DTC144ES					R6	1-249-432-11	CARBON	18K	5%	1/4W	
Q5	8-729-900-89	TRANSISTOR DTC144ES					R7	1-249-434-11	CARBON	27K	5%	1/4W	
							R8	1-249-422-11	CARBON	2.7K	5%	1/4W	
							R9	1-249-405-11	CARBON	100	5%	1/4W	
							R10	1-249-405-11	CARBON	100	5%	1/4W	
							R11	1-249-433-11	CARBON	22K	5%	1/4W	
							R12	1-249-405-11	CARBON	100	5%	1/4W	
							R13	1-249-437-11	CARBON	47K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R14	1-249-429-11	CARBON	10K 5% 1/4W	R512	1-249-421-11	CARBON	2.2K 5% 1/4W
R101	1-249-417-11	CARBON	1K 5% 1/4W	R513	1-249-393-11	CARBON	10 5% 1/4W
R102	1-249-418-11	CARBON	1.2K 5% 1/4W	R601	1-249-417-11	CARBON	1K 5% 1/4W
R103	1-249-425-11	CARBON	4.7K 5% 1/4W	R602	1-249-418-11	CARBON	1.2K 5% 1/4W
R104	1-249-405-11	CARBON	100 5% 1/4W	R603	1-249-425-11	CARBON	4.7K 5% 1/4W
R105	1-215-437-00	METAL	4.7K 1% 1/4W	R604	1-249-405-11	CARBON	100 5% 1/4W
R106	1-249-430-11	CARBON	12K 5% 1/4W	R605	1-215-437-00	METAL	4.7K 1% 1/4W
R107	1-249-433-11	CARBON	22K 5% 1/4W	R606	1-249-430-11	CARBON	12K 5% 1/4W
R108	1-215-427-00	METAL	1.8K 1% 1/4W	R607	1-249-433-11	CARBON	22K 5% 1/4W
R109	1-215-415-00	METAL	560 1% 1/4W	R608	1-215-427-00	METAL	1.8K 1% 1/4W
R110	1-249-405-11	CARBON	100 5% 1/4W	R609	1-215-415-00	METAL	560 1% 1/4W
R111	1-215-431-00	METAL	2.7K 1% 1/4W	R610	1-249-405-11	CARBON	100 5% 1/4W
R112	1-249-421-11	CARBON	2.2K 5% 1/4W	R611	1-215-431-00	METAL	2.7K 1% 1/4W
R113	1-249-393-11	CARBON	10 5% 1/4W	R612	1-249-421-11	CARBON	2.2K 5% 1/4W
R201	1-249-417-11	CARBON	1K 5% 1/4W	R613	1-249-393-11	CARBON	10 5% 1/4W
R202	1-249-418-11	CARBON	1.2K 5% 1/4W	R701	1-249-433-11	CARBON	22K 5% 1/4W
R203	1-249-425-11	CARBON	4.7K 5% 1/4W	R702	1-249-438-11	CARBON	56K 5% 1/4W
R204	1-249-405-11	CARBON	100 5% 1/4W	R703	1-249-417-11	CARBON	1K 5% 1/4W
R205	1-215-437-00	METAL	4.7K 1% 1/4W	R704	1-249-417-11	CARBON	1K 5% 1/4W
R206	1-249-430-11	CARBON	12K 5% 1/4W	R705	1-249-424-11	CARBON	3.9K 5% 1/4W
R207	1-249-433-11	CARBON	22K 5% 1/4W	R706	1-249-417-11	CARBON	1K 5% 1/4W
R208	1-215-427-00	METAL	1.8K 1% 1/4W	R707	1-249-429-11	CARBON	10K 5% 1/4W
R209	1-215-415-00	METAL	560 1% 1/4W	R708	1-249-421-11	CARBON	2.2K 5% 1/4W
R210	1-249-405-11	CARBON	100 5% 1/4W	R709	1-249-419-11	CARBON	1.5K 5% 1/4W
R211	1-215-431-00	METAL	2.7K 1% 1/4W	R710	1-249-418-11	CARBON	1.2K 5% 1/4W
R212	1-249-421-11	CARBON	2.2K 5% 1/4W	R711	1-249-434-11	CARBON	27K 5% 1/4W
R213	1-249-393-11	CARBON	10 5% 1/4W	R712	1-249-433-11	CARBON	22K 5% 1/4W
R301	1-249-417-11	CARBON	1K 5% 1/4W	R713	1-249-422-11	CARBON	2.7K 5% 1/4W
R302	1-249-418-11	CARBON	1.2K 5% 1/4W	R714	1-249-427-11	CARBON	6.8K 5% 1/4W
R303	1-249-426-11	CARBON	5.6K 5% 1/4W	R715	1-249-433-11	CARBON	22K 5% 1/4W
R304	1-249-405-11	CARBON	100 5% 1/4W	R716	1-249-422-11	CARBON	2.7K 5% 1/4W
R305	1-249-426-11	CARBON	5.6K 5% 1/4W	R717	1-249-425-11	CARBON	4.7K 5% 1/4W
R306	1-249-430-11	CARBON	12K 5% 1/4W	R718	1-249-410-11	CARBON	270 5% 1/4W
R307	1-249-432-11	CARBON	18K 5% 1/4W	R719	1-249-414-11	CARBON	560 5% 1/4W
R308	1-249-421-11	CARBON	2.2K 5% 1/4W	R720	1-247-850-11	CARBON	6.2K 5% 1/4W
R309	1-249-417-11	CARBON	1K 5% 1/4W	R721	1-249-438-11	CARBON	56K 5% 1/4W
R310	1-249-405-11	CARBON	100 5% 1/4W	R722	1-249-441-11	CARBON	100K 5% 1/4W
R311	1-249-417-11	CARBON	1K 5% 1/4W	R723	1-249-437-11	CARBON	47K 5% 1/4W
R312	1-249-421-11	CARBON	2.2K 5% 1/4W	R724	1-249-429-11	CARBON	10K 5% 1/4W
R313	1-249-393						

BA BC

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV401	1-237-514-21	RES, ADJ, CERMET 500		C122	1-124-034-51	ELECT 33MF	20% 16V
RV501	1-237-514-21	RES, ADJ, CERMET 500		C123	1-124-034-51	ELECT 33MF	20% 16V
RV601	1-237-514-21	RES, ADJ, CERMET 500		C126	1-101-004-00	CERAMIC 0.01MF	50V
*****				C127	1-101-004-00	CERAMIC 0.01MF	50V
*A-1135-357-A	BC BOARD, COMPLETE (BVM-1911 ONLY)			C128	1-101-004-00	CERAMIC 0.01MF	50V
*****				C131	1-124-034-51	ELECT 33MF	20% 16V
*4-353-708-00	HOOK, FINGER			C132	1-124-034-51	ELECT 33MF	20% 16V
<CAPACITOR>				C133	1-124-034-51	ELECT 33MF	20% 16V
C1	1-102-951-00	CERAMIC 15PF	5% 50V	C136	1-101-004-00	CERAMIC 0.01MF	50V
C2	1-102-951-00	CERAMIC 15PF	5% 50V	C137	1-101-004-00	CERAMIC 0.01MF	50V
C3	1-102-947-00	CERAMIC 10PF	0.5PF 50V	C138	1-101-004-00	CERAMIC 0.01MF	50V
C4	1-101-880-00	CERAMIC 47PF	5% 50V	C139	1-101-004-00	CERAMIC 0.01MF	50V
C5	1-102-965-00	CERAMIC 39PF	5% 50V	C143	1-101-004-00	CERAMIC 0.01MF	50V
C6	1-101-004-00	CERAMIC 0.01MF	50V	C144	1-126-233-11	ELECT 22MF	20% 25V
C7	1-102-935-00	CERAMIC 2PF	0.25PF 50V	C201	1-124-917-11	ELECT 33MF	20% 25V
C8	1-101-361-00	CERAMIC 39PF	5% 50V	C202	1-101-004-00	CERAMIC 0.01MF	50V
C9	1-124-915-11	ELECT 10MF	20% 16V	<TRIMMER>			
C10	1-124-915-11	ELECT 10MF	20% 16V	CV1	1-141-171-00	CAP, TRIMMER 15P	
C11	1-101-004-00	CERAMIC 0.01MF	50V	CV2	1-141-171-00	CAP, TRIMMER 15P	
C12	1-101-004-00	CERAMIC 0.01MF	50V	<DIODE>			
C13	1-101-004-00	CERAMIC 0.01MF	50V	D1	8-719-911-19	DIODE 1SS119	
C14	1-101-004-00	CERAMIC 0.01MF	50V	D2	8-719-920-95	DIODE 1T25-0	
C15	1-124-910-11	ELECT 47MF	20% 16V	D3	8-719-911-19	DIODE 1SS119	
C16	1-124-910-11	ELECT 47MF	20% 16V	D4	8-719-110-13	DIODE RD9.1ESB2	
C17	1-124-034-51	ELECT 33MF	20% 16V	D5	8-719-911-19	DIODE 1SS119	
C18	1-101-004-00	CERAMIC 0.01MF	50V	D6	8-719-911-19	DIODE 1SS119	
C19	1-102-953-00	CERAMIC 18PF	5% 50V	D7	8-719-911-19	DIODE 1SS119	
C20	1-102-951-00	CERAMIC 15PF	5% 50V	<IC>			
C22	1-101-884-00	CERAMIC 56PF	5% 50V	IC1	8-759-204-21	IC TA7193P	
C23	1-123-369-00	ELECT 4.7MF	20% 25V	IC2	8-752-006-12	IC CX20061	
C24	1-163-157-00	FILM 0.022MF	5% 50V	IC3	8-759-140-53	IC UPD4053BC	
C25	1-163-157-00	FILM 0.022MF	5% 50V	<COIL>			
C26	1-101-004-00	CERAMIC 0.01MF	50V	L1	1-408-533-00	COIL, VARIABLE	
C27	1-101-004-00	CERAMIC 0.01MF	50V	L2	1-408-513-00	COIL (VARIABLE)	
C28	1-123-379-00	ELECT 0.47MF	20% 50V	L3	1-408-533-00	COIL, VARIABLE	
C29	1-101-004-00	CERAMIC 0.01MF	50V	L4	1-408-429-00	INDUCTOR 470UH	
C30	1-101-004-00	CERAMIC 0.01MF	50V	L5	1-408-429-00	INDUCTOR 470UH	
C31	1-124-119-00	ELECT 330MF	20% 16V	L6	1-408-429-00	INDUCTOR 470UH	
C34	1-109-676-00	MICA 130PF	1% 500V	<TRANSISTOR>			
C35	1-109-631-00	MICA 330PF	1% 500V	Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C36	1-102-960-00	CERAMIC 24PF	5% 50V	Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C39	1-109-676-00	MICA 130PF	1% 500V	Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C40	1-109-631-00	MICA 330PF	1% 500V	Q4	8-729-800-10	TRANSISTOR 2SC3068	
C41	1-102-960-00	CERAMIC 24PF	5% 50V	Q5	8-729-800-10	TRANSISTOR 2SC3068	
C42	1-101-004-00	CERAMIC 0.01MF	50V	Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C50	1-102-942-00	CERAMIC 5PF	0.5PF 50V	Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C101	1-124-034-51	ELECT 33MF	20% 16V	Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C102	1-101-004-00	CERAMIC 0.01MF	50V	Q9	8-729-384-48	TRANSISTOR 2SA844-E	
C103	1-124-917-11	ELECT 33MF	20% 25V	Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C104	1-124-034-51	ELECT 33MF	20% 16V	Q11	8-729-384-48	TRANSISTOR 2SA844-E	
C105	1-101-004-00	CERAMIC 0.01MF	50V	Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C106	1-124-917-11	ELECT 33MF	20% 25V	Q13	8-729-384-48	TRANSISTOR 2SA844-E	
C107	1-101-004-00	CERAMIC 0.01MF	50V	Q14	8-729-384-48	TRANSISTOR 2SA844-E	
C111	1-124-034-51	ELECT 33MF	20% 16V	Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C112	1-124-034-51	ELECT 33MF	20% 16V				
C113	1-124-034-51	ELECT 33MF	20% 16V				
C116	1-101-004-00	CERAMIC 0.01MF	50V				
C117	1-101-004-00	CERAMIC 0.01MF	50V				
C118	1-101-004-00	CERAMIC 0.01MF	50V				
C121	1-124-034-51	ELECT 33MF	20% 16V				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R56	1-249-441-11	CARBON 100K 5%	1/4W
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R57	1-249-417-11	CARBON 1K 5%	1/4W
Q18	8-729-800-10	TRANSISTOR 2SC3068		R58	1-249-417-11	CARBON 1K 5%	1/4W
Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE		R59	1-249-429-11	CARBON 10K 5%	1/4W
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE		R60	1-249-433-11	CARBON 22K 5%	1/4W
Q21	8-729-800-10	TRANSISTOR 2SC3068		R61	1-249-420-11	CARBON 1.8K 5%	1/4W
Q101	8-729-140-97	TRANSISTOR 2SB734-34		R62	1-249-429-11	CARBON 10K 5%	1/4W
Q103	8-729-900-63	TRANSISTOR DTA124ES		R63	1-249-425-11	CARBON 4.7K 5%	1/4W
Q104	8-729-900-63	TRANSISTOR DTA124ES		R64	1-249-429-11	CARBON 10K 5%	1/4W
<RESISTOR>				R65	1-215-421-00	METAL 1K 1%	1/4W
R1	1-249-428-11	CARBON 8.2K 5%	1/4W	R68	1-249-427-11	CARBON 6.8K 5%	1/4W
R2	1-249-429-11	CARBON 10K 5%	1/4W	R69	1-215-420-00	METAL 910 1%	1/4W
R3	1-249-405-11	CARBON 100 5%	1/4W	R70	1-215-420-00	METAL 910 1%	1/4W
R4	1-249-422-11	CARBON 2.7K 5%	1/4W	R71	1-215-417-00	METAL 680 1%	1/4W
R5	1-215-421-00	METAL 1K 1%	1/4W	R72	1-249-422-11	CARBON 2.7K 5%	1/4W
R6	1-215-398-00	METAL 110 1%	1/4W	R73	1-249-405-11	CARBON 100 5%	1/4W
R7	1-249-405-11	CARBON 100 5%	1/4W	R74	1-215-421-00	METAL 1K 1%	1/4W
R8	1-215-421-00	METAL 1K 1%	1/4W	R77	1-249-427-11	CARBON 6.8K 5%	1/4W
R9	1-215-421-00	METAL 1K 1%	1/4W	R78	1-215-420-00	METAL 910 1%	1/4W
R10	1-215-423-00	METAL 1.2K 1%	1/4W	R79	1-215-420-00	METAL 910 1%	1/4W
R11	1-249-405-11	CARBON 100 5%	1/4W	R80	1-215-417-00	METAL 680 1%	1/4W
R12	1-215-425-00	METAL 1.5K 1%	1/4W	R81	1-249-422-11	CARBON 2.7K 5%	1/4W
R13	1-215-425-00	METAL 1.5K 1%	1/4W	R82	1-249-405-11	CARBON 100 5%	1/4W
R14	1-215-405-00	METAL 220 1%	1/4W	R83	1-215-481-00	METAL 330K 1%	1/4W
R15	1-249-405-11	CARBON 100 5%	1/4W	R85	1-215-429-00	METAL 2.2K 1%	1/4W
R16	1-249-433-11	CARBON 22K 5%	1/4W	R86	1-215-415-00	METAL 560 1%	1/4W
R17	1-249-433-11	CARBON 22K 5%	1/4W	R87	1-215-477-00	METAL 220K 1%	1/4W
R18	1-249-421-11	CARBON 2.2K 5%	1/4W	R88	1-215-457-00	METAL 33K 1%	1/4W
R19	1-249-425-11	CARBON 4.7K 5%	1/4W	R90	1-249-429-11	CARBON 10K 5%	1/4W
R20	1-249-429-11	CARBON 10K 5%	1/4W	R91	1-249-433-11	CARBON 22K 5%	1/4W
R22	1-249-429-11	CARBON 10K 5%	1/4W	R95	1-249-429-11	CARBON 10K 5%	1/4W
R23	1-249-431-11	CARBON 15K 5%	1/4W	R96	1-249-433-11	CARBON 22K 5%	1/4W
R24	1-249-428-11	CARBON 8.2K 5%	1/4W	R101	1-249-423-11	CARBON 3.3K 5%	1/4W
R25	1-249-405-11	CARBON 100 5%	1/4W	R102	1-249-419-11	CARBON 1.5K 5%	1/4W
R26	1-249-417-11	CARBON 1K 5%	1/4W	R103	1-249-427-11	CARBON 6.8K 5%	1/4W
R27	1-249-405-11	CARBON 100 5%	1/4W	R104	1-249-422-11	CARBON 2.7K 5%	1/4W
R28	1-249-417-11	CARBON 1K 5%	1/4W	R105	1-249-429-11	CARBON 10K 5%	1/4W
R29	1-249-405-11	CARBON 100 5%	1/4W	R202	1-249-429-11	CARBON 10K 5%	1/4W
R30	1-249-425-11	CARBON 4.7K 5%	1/4W	<VARIABLE RESISTOR>			
R31	1-249-425-11	CARBON 4.7K 5%	1/4W	RV1	1-237-500-21	RES, ADJ, CERMET 1K	
R32	1-249-433-11	CARBON 22K 5%	1/4W	RV2	1-237-504-21	RES, ADJ, CERMET 20K	
R33	1-249-405-11	CARBON 100 5%	1/4W	RV3	1-237-499-21	RES, ADJ, CERMET 500	
R34	1-215-425-00	METAL 1.5K 1%	1/4W	RV4	1-237-501-21	RES, ADJ, CERMET 2K	
R35	1-215-425-00	METAL 1.5K 1%	1/4W	RV5	1-237-501-21	RES, ADJ, CERMET 2K	
R36	1-215-425-00	METAL 1.5K 1%	1/4W	<CRYSTAL>			
R37	1-215-425-00	METAL 1.5K 1%	1/4W	X1	1-567-505-11	OSCILLATOR, CRYSTAL	
R38	1-215-439-00	METAL 5.6K 1%	1/4W	*****			
R39	1-215-469-00	METAL 100K 1%	1/4W	*A-1135-391-A BD BOARD, COMPLETE (BVM-2011P ONLY)			
R40	1-247-903-00	CARBON 1M 5%	1/4W	*****			
R41	1-249-427-11	CARBON 6.8K 5%	1/4W	*4-353-708-00 HOOK, FINGER			
R42	1-249-420-11	CARBON 1.8K 5%	1/4W	<CAPACITOR>			
R43	1-249-415-11	CARBON 680 5%	1/4W	C1	1-102-947-00	CERAMIC 10PF 0.5PF	50V
R44	1-249-418-11	CARBON 1.2K 5%	1/4W	C2	1-102-947-00	CERAMIC 10PF 0.5PF	50V
R45	1-249-422-11	CARBON 2.7K 5%	1/4W	C3	1-102-963-00	CERAMIC 33PF 5%	50V
R47	1-249-413-11	CARBON 470 5%	1/4W	C4	1-101-880-00	CERAMIC 47PF 5%	50V
R49	1-249-413-11	CARBON 470 5%	1/4W	C6	1-101-888-00	CERAMIC 68PF 5%	50V
R50	1-249-405-11	CARBON 100 5%	1/4W				
R51	1-215-417-00	METAL 680 1%	1/4W				
R52	1-215-417-00	METAL 680 1%	1/4W				
R53	1-215-413-00	METAL 470 1%	1/4W				
R54	1-215-443-00	METAL 8.2K 1%	1/4W				
R55	1-249-421-11	CARBON 2.2K 5%	1/4W				

## 7. ELECTRICAL PARTS LIST

7-6

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC2	8-759-800-81	IC LA7016		<RESISTOR>			
IC3	8-759-246-15	IC TL8608AP		R1	1-249-428-11	CARBON 8.2K 5% 1/4W	
	*1-526-654-00	SOCKET, IC (DP) 16P; IC3		R2	1-249-429-11	CARBON 10K 5% 1/4W	
IC4	8-759-246-15	IC TL8608AP		R3	1-249-422-11	CARBON 2.7K 5% 1/4W	
	*1-526-654-00	SOCKET, IC (DP) 16P; IC4		R4	1-215-425-00	METAL 1.5K 1% 1/4W	
IC5	8-759-140-53	IC UPD4053BC		R5	1-215-395-00	METAL 82 1% 1/4W	
IC6	8-759-800-81	IC LA7016		R6	1-215-421-00	METAL 1K 1% 1/4W	
IC7	8-759-145-58	IC UPC4558C		R7	1-215-421-00	METAL 1K 1% 1/4W	
IC8	8-759-145-58	IC UPC4558C		R8	1-215-423-00	METAL 1.2K 1% 1/4W	
				R9	1-215-421-00	METAL 1K 1% 1/4W	
				R10	1-215-421-00	METAL 1K 1% 1/4W	
		<COIL>		R11	1-215-391-00	METAL 56 1% 1/4W	
L1	1-408-533-00	COIL, VARIABLE		R12	1-215-427-00	METAL 1.8K 1% 1/4W	
L2	1-408-532-00	COIL, VARIABLE		R13	1-249-425-11	CARBON 4.7K 5% 1/4W	
L3	9-910-999-31	COIL (VARIABLE)		R14	1-249-429-11	CARBON 10K 5% 1/4W	
L4	1-408-421-00	INDUCTOR 100UH		R15	1-249-429-11	CARBON 10K 5% 1/4W	
L5	1-408-429-00	INDUCTOR 470UH		R17	1-249-433-11	CARBON 22K 5% 1/4W	
L6	1-408-429-00	INDUCTOR 470UH		R18	1-215-425-00	METAL 1.5K 1% 1/4W	
L8	1-408-421-00	INDUCTOR 100UH		R19	1-215-425-00	METAL 1.5K 1% 1/4W	
L101	1-408-421-00	INDUCTOR 100UH		R20	1-215-425-00	METAL 1.5K 1% 1/4W	
L102	1-408-421-00	INDUCTOR 100UH		R21	1-215-425-00	METAL 1.5K 1% 1/4W	
		<TRANSISTOR>		R22	1-249-405-11	CARBON 100 5% 1/4W	
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE		R23	1-215-441-00	METAL 6.8K 1% 1/4W	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R24	1-215-469-00	METAL 100K 1% 1/4W	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R25	1-249-427-11	CARBON 6.8K 5% 1/4W	
Q4	8-729-800-10	TRANSISTOR 2SC3068		R26	1-249-415-11	CARBON 680 5% 1/4W	
Q5	8-729-800-10	TRANSISTOR 2SC3068		R27	1-249-415-11	CARBON 680 5% 1/4W	
Q6	8-729-384-48	TRANSISTOR 2SA844-E		R28	1-249-420-11	CARBON 1.8K 5% 1/4W	
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE		R29	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q8	8-729-384-48	TRANSISTOR 2SA844-E		R30	1-249-405-11	CARBON 100 5% 1/4W	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R31	1-247-903-00	CARBON 1M 5% 1/4W	
Q10	8-729-119-76	TRANSISTOR 2SA1175-HFE		R32	1-249-429-11	CARBON 10K 5% 1/4W	
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		R34	1-215-407-00	METAL 270 1% 1/4W	
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE		R35	1-215-407-00	METAL 270 1% 1/4W	
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		R36	1-215-413-00	METAL 470 1% 1/4W	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R37	1-215-443-00	METAL 8.2K 1% 1/4W	
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE		R38	1-249-441-11	CARBON 100K 5% 1/4W	
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R39	1-215-425-00	METAL 1.5K 1% 1/4W	
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R40	1-215-421-00	METAL 1K 1% 1/4W	
Q18	8-729-600-19	TRANSISTOR 2SK381-A		R41	1-215-429-00	METAL 2.2K 1% 1/4W	
Q20	8-729-119-76	TRANSISTOR 2SA1175-HFE		R42	1-215-445-00	METAL 10K 1% 1/4W	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE		R43	1-215-421-00	METAL 1K 1% 1/4W	
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE		R44	1-249-433-11	CARBON 22K 5% 1/4W	
Q23	8-729-384-48	TRANSISTOR 2SA844-E		R45	1-249-429-11	CARBON 10K 5% 1/4W	
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE		R46	1-249-429-11	CARBON 10K 5% 1/4W	
Q25	8-729-800-10	TRANSISTOR 2SC3068		R47	1-249-441-11	CARBON 100K 5% 1/4W	
Q26	8-729-600-19	TRANSISTOR 2SK381-A		R48	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q28	8-729-119-76	TRANSISTOR 2SA1175-HFE		R54	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE		R55	1-215-418-00	METAL 750 1% 1/4W	
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE		R56	1-215-420-00	METAL 910 1% 1/4W	
Q31	8-729-384-48	TRANSISTOR 2SA844-E		R57	1-249-415-11	CARBON 680 5% 1/4W	
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE		R58	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q33	8-729-800-10	TRANSISTOR 2SC3068		R59	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q34	8-729-119-78	TRANSISTOR 2SC2785-HFE		R60	1-215-418-00	METAL 750 1% 1/4W	
Q35	8-729-119-78	TRANSISTOR 2SC2785-HFE		R61	1-215-420-00	METAL 910 1% 1/4W	
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE		R62	1-249-415-11	CARBON 680 5% 1/4W	
Q38	8-729-119-78	TRANSISTOR 2SC2785-HFE		R63	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q101	8-729-140-97	TRANSISTOR 2SB734-34		R64	1-215-477-00	METAL 220K 1% 1/4W	
Q102	8-729-320-62	TRANSISTOR 2SD789-34		R65	1-215-435-00	METAL 3.9K 1% 1/4W	
Q103	8-729-900-63	TRANSISTOR DTA124ES		R66	1-249-405-11	CARBON 100 5% 1/4W	
Q104	8-729-900-63	TRANSISTOR DTA124ES		R70	1-247-903-00	CARBON 1M 5% 1/4W	
				R71	1-249-429-11	CARBON 10K 5% 1/4W	
				R72	1-249-429-11	CARBON 10K 5% 1/4W	



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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R73	1-249-429-11	CARBON	10K 5% 1/4W	R310	1-249-422-11	CARBON	2.7K 5% 1/4W
R74	1-249-417-11	CARBON	1K 5% 1/4W	R314	1-215-417-00	METAL	680 1% 1/4W
R75	1-249-427-11	CARBON	6.8K 5% 1/4W	R315	1-249-422-11	CARBON	2.7K 5% 1/4W
R76	1-249-427-11	CARBON	6.8K 5% 1/4W	R316	1-249-413-11	CARBON	470 5% 1/4W
R77	1-249-425-11	CARBON	4.7K 5% 1/4W	R317	1-249-413-11	CARBON	470 5% 1/4W
R78	1-215-424-00	METAL	1.3K 1% 1/4W	R320	1-215-472-00	METAL	130K 1% 1/4W
R79	1-215-419-00	METAL	820 1% 1/4W	R353	1-249-432-11	CARBON	18K 5% 1/4W
R80	1-215-425-00	METAL	1.5K 1% 1/4W	R354	1-249-432-11	CARBON	18K 5% 1/4W
R81	1-249-422-11	CARBON	2.7K 5% 1/4W	R400	1-215-429-00	METAL	2.2K 1% 1/4W
R82	1-249-425-11	CARBON	4.7K 5% 1/4W				
R83	1-249-435-11	CARBON	33K 5% 1/4W			<VARIABLE RESISTOR>	
R84	1-249-435-11	CARBON	33K 5% 1/4W	RV1	1-237-515-21	RES, ADJ, CERMET 1K	
R85	1-247-903-00	CARBON	1M 5% 1/4W	RV2	1-237-499-21	RES, ADJ, CERMET 500	
R86	1-249-429-11	CARBON	10K 5% 1/4W	RV3	1-237-501-21	RES, ADJ, CERMET 2K	
R87	1-249-429-11	CARBON	10K 5% 1/4W	RV4	1-237-501-21	RES, ADJ, CERMET 2K	
R88	1-249-429-11	CARBON	10K 5% 1/4W	RV5	1-237-517-21	RES, ADJ, CERMET 5K	
R89	1-249-417-11	CARBON	1K 5% 1/4W	RV6	1-237-517-21	RES, ADJ, CERMET 5K	
R90	1-249-427-11	CARBON	6.8K 5% 1/4W	RV7	1-237-504-21	RES, ADJ, CERMET 20K	
R91	1-249-427-11	CARBON	6.8K 5% 1/4W	RV8	1-237-504-21	RES, ADJ, CERMET 20K	
R92	1-249-425-11	CARBON	4.7K 5% 1/4W	RV9	1-237-517-21	RES, ADJ, CERMET 5K	
R93	1-215-424-00	METAL	1.3K 1% 1/4W	RV10	1-237-517-21	RES, ADJ, CERMET 5K	
R94	1-215-419-00	METAL	820 1% 1/4W			<CRYSTAL>	
R95	1-215-425-00	METAL	1.5K 1% 1/4W	X1	1-567-504-11	OSCILLATOR, CRYSTAL	
R96	1-249-422-11	CARBON	2.7K 5% 1/4W	X2	1-567-409-11	VIBRATOR, CRYSTAL	
R97	1-249-425-11	CARBON	4.7K 5% 1/4W			*****	
R98	1-249-435-11	CARBON	33K 5% 1/4W			*A-1135-358-A BG BOARD, COMPLETE	
R99	1-249-435-11	CARBON	33K 5% 1/4W			*****	
R100	1-215-438-00	METAL	5.1K 1% 1/4W			*4-353-708-00 HOOK, FINGER	
R101	1-215-438-00	METAL	5.1K 1% 1/4W				
R102	1-215-438-00	METAL	5.1K 1% 1/4W			<CAPACITOR>	
R103	1-215-438-00	METAL	5.1K 1% 1/4W	C1	1-124-910-11	ELECT	47MF 20% 16V
R104	1-249-437-11	CARBON	47K 5% 1/4W	C2	1-124-910-11	ELECT	47MF 20% 16V
R105	1-249-438-11	CARBON	56K 5% 1/4W	C3	1-124-915-11	ELECT	10MF 20% 16V
R106	1-249-417-11	CARBON	1K 5% 1/4W	C4	1-124-910-11	ELECT	47MF 20% 16V
R107	1-249-417-11	CARBON	1K 5% 1/4W	C7	1-101-004-00	CERAMIC	0.01MF 50V
R108	1-249-417-11	CARBON	1K 5% 1/4W	C8	1-101-004-00	CERAMIC	0.01MF 50V
R109	1-249-417-11	CARBON	1K 5% 1/4W	C9	1-101-004-00	CERAMIC	0.01MF 50V
R110	1-249-417-11	CARBON	1K 5% 1/4W	C10	1-102-935-00	CERAMIC	2PF 0.25PF 50V
R115	1-215-438-00	METAL	5.1K 1% 1/4W	C12	1-101-004-00	CERAMIC	0.01MF 50V
R116	1-215-438-00	METAL	5.1K 1% 1/4W	C16	1-101-004-00	CERAMIC	0.01MF 50V
R120	1-249-429-11	CARBON	10K 5% 1/4W	C20	1-124-903-11	ELECT	1MF 20% 50V
R121	1-249-429-11	CARBON	10K 5% 1/4W	C22	1-101-004-00	CERAMIC	0.01MF 50V
R130	1-215-477-00	METAL	220K 1% 1/4W	C26	1-101-004-00	CERAMIC	0.01MF 50V
R150	1-249-441-11	CARBON	100K 5% 1/4W	C32	1-101-004-00	CERAMIC	0.01MF 50V
R201	1-249-423-11	CARBON	3.3K 5% 1/4W	C33	1-136-165-00	FILM	0.1MF 5% 50V
R202	1-249-423-11	CARBON	3.3K 5% 1/4W	C34	1-136-165-00	FILM	0.1MF 5% 50V
R203	1-249-422-11	CARBON	2.7K 5% 1/4W	C35	1-136-165-00	FILM	0.1MF 5% 50V
R204	1-249-423-11	CARBON	3.3K 5% 1/4W	C41	1-102-942-00	CERAMIC	5PF 1PF 50V
R220	1-249-441-11	CARBON	100K 5% 1/4W	C42	1-102-947-00	CERAMIC	10PF 0.5PF 50V
R221	1-249-433-11	CARBON	22K 5% 1/4W	C44	1-102-936-00	CERAMIC	3PF 0.25PF 50V
R222	1-249-433-11	CARBON	22K 5% 1/4W	C45	1-102-947-00	CERAMIC	10PF 0.5PF 50V
R250	1-215-415-00	METAL	560 1% 1/4W	C47	1-124-915-11	ELECT	10MF 20% 16V
R251	1-215-415-00	METAL	560 1% 1/4W	C53	1-124-915-11	ELECT	10MF 20% 25V
R252	1-215-421-00	METAL	1K 1% 1/4W	C54	1-101-004-00	CERAMIC	0.01MF 50V
R254	1-249-429-11	CARBON	10K 5% 1/4W	C55	1-102-976-00	CERAMIC	180PF 5% 50V
R255	1-249-441-11	CARBON	100K 5% 1/4W	C56	1-102-976-00	CERAMIC	180PF 5% 50V
R259	1-215-421-00	METAL	1K 1% 1/4W	C101	1-126-103-11	ELECT	470MF 20% 16V
R301	1-215-469-00	METAL	100K 1% 1/4W	C102	1-124-034-51	ELECT	33MF 20% 16V
R302	1-215-491-00	METAL	820K 1% 1/4W				
R303	1-249-418-11	CARBON	1.2K 5% 1/4W				
R305	1-249-431-11	CARBON	15K 5% 1/4W				
R306	1-249-428-11	CARBON	8.2K 5% 1/4W				
R307	1-249-417-11	CARBON	1K 5% 1/4W				
R308	1-249-417-11	CARBON	1K 5% 1/4W				

7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C103	1-124-119-00	ELECT	330MF	20%	16V		
C105	1-126-103-11	ELECT	470MF	20%	16V		
C106	1-124-034-51	ELECT	33MF	20%	16V		
C111	1-124-915-11	ELECT	10MF	20%	16V		
C112	1-101-004-00	CERAMIC	0.01MF		50V		
C113	1-101-004-00	CERAMIC	0.01MF		50V		
C114	1-101-004-00	CERAMIC	0.01MF		50V		
C115	1-101-004-00	CERAMIC	0.01MF		50V		
C116	1-101-004-00	CERAMIC	0.01MF		50V		
C117	1-101-004-00	CERAMIC	0.01MF		50V		
C131	1-126-103-11	ELECT	470MF	20%	16V		
C132	1-124-034-51	ELECT	33MF	20%	16V		
C133	1-124-119-00	ELECT	330MF	20%	16V		
C135	1-126-103-11	ELECT	470MF	20%	16V		
C136	1-124-034-51	ELECT	33MF	20%	16V		
C141	1-101-004-00	CERAMIC	0.01MF		50V		
C142	1-101-004-00	CERAMIC	0.01MF		50V		
C143	1-101-004-00	CERAMIC	0.01MF		50V		
C144	1-101-004-00	CERAMIC	0.01MF		50V		
C145	1-101-004-00	CERAMIC	0.01MF		50V		
C146	1-101-004-00	CERAMIC	0.01MF		50V		
C147	1-101-004-00	CERAMIC	0.01MF		50V		
<COMPOSITION CIRCUIT BLOCK>							
CP11	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP12	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP13	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP14	1-233-018-11	COMPOSITION CIRCUIT BLOCK					
CP15	1-233-019-11	COMPOSITION CIRCUIT BLOCK					
CP16	1-233-031-11	COMPOSITION CIRCUIT BLOCK					
CP17	1-233-032-11	COMPOSITION CIRCUIT BLOCK					
CP18	1-233-013-11	COMPOSITION CIRCUIT BLOCK					
CP19	1-233-017-11	COMPOSITION CIRCUIT BLOCK					
CP20	1-232-752-11	COMPOSITION CIRCUIT BLOCK					
CP21	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP22	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP23	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP25	1-232-730-11	COMPOSITION CIRCUIT BLOCK					
CP26	1-232-730-11	COMPOSITION CIRCUIT BLOCK					
CP27	1-231-765-00	COMPOSITION CIRCUIT BLOCK					
CP28	1-232-752-11	COMPOSITION CIRCUIT BLOCK					
CP29	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP30	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP31	1-232-734-11	COMPOSITION CIRCUIT BLOCK					
CP32	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP33	1-232-738-11	COMPOSITION CIRCUIT BLOCK					
CP41	1-233-014-11	COMPOSITION CIRCUIT BLOCK					
CP42	1-233-014-11	COMPOSITION CIRCUIT BLOCK					
CP51	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP52	1-232-727-11	COMPOSITION CIRCUIT BLOCK					
CP53	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
CP54	1-232-726-11	COMPOSITION CIRCUIT BLOCK					
CP55	1-232-727-11	COMPOSITION CIRCUIT BLOCK					
CP56	1-232-728-11	COMPOSITION CIRCUIT BLOCK					
<TRIMMER>							
CV2	1-141-181-11	CAP, TRIMMER					
CV3	1-141-171-00	CAP, TRIMMER 20P					
<DIODE>							
D1	8-719-911-19	DIODE 1SS119		D2	8-719-911-19	DIODE 1SS119	
				D3	8-719-016-42	DIODE MC932	
				D4	8-719-016-42	DIODE MC932	
				D5	8-719-911-19	DIODE 1SS119	
				D6	8-719-911-19	DIODE 1SS119	
				D7	8-719-911-19	DIODE 1SS119	
				D8	8-719-109-93	DIODE RD6.2ESB2	
				D11	8-719-911-19	DIODE 1SS119	
				D12	8-719-911-19	DIODE 1SS119	
				D13	8-719-911-19	DIODE 1SS119	
				D14	8-719-911-19	DIODE 1SS119	
				D16	8-719-911-19	DIODE 1SS119	
				D17	8-719-911-19	DIODE 1SS119	
<DELAY LINE>							
				DL1	1-415-477-11	DELAY LINE	
				DL2	1-415-458-11	DELAY LINE	
				DL3	1-415-490-11	DELAY LINE	
				DL4	1-415-490-11	DELAY LINE	
<IC>							
				IC1	8-759-800-81	IC LA7016	
				IC2	8-766-001-49	TRANSISTOR TX-429M	
				IC3	8-759-145-58	IC UPC4558C	
				IC4	8-757-182-14	IC CX-718D-1	
				IC5	8-759-140-53	IC UPD4053BC	
				IC6	8-759-140-53	IC UPD4053BC	
				IC7	8-759-990-82	IC TL082CP	
				IC8	8-759-990-82	IC TL082CP	
				IC9	8-759-990-82	IC TL082CP	
<COIL>							
				L2	1-408-408-00	INDUCTOR 8.2UH	
<TRANSISTOR>							
				Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q10	8-729-384-48	TRANSISTOR 2SA844-B	
				Q11	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q14	8-729-800-10	TRANSISTOR 2SC3068	
				Q21	8-729-384-48	TRANSISTOR 2SA844-B	
				Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q24	8-729-600-19	TRANSISTOR 2SK381-A	
				Q25	8-729-384-48	TRANSISTOR 2SA844-B	
				Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q28	8-729-600-19	TRANSISTOR 2SK381-A	
				Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q31	8-729-384-48	TRANSISTOR 2SA844-B	
				Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q34	8-729-600-19	TRANSISTOR 2SK381-A	
				Q35	8-729-384-48	TRANSISTOR 2SA844-B	

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q37	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q38	8-729-600-19	TRANSISTOR 2SK381-A	
Q39	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q41	8-729-384-48	TRANSISTOR 2SA844-E	
Q42	8-729-384-48	TRANSISTOR 2SA844-E	
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q44	8-729-384-48	TRANSISTOR 2SA844-E	
Q45	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q49	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q50	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q51	8-729-900-63	TRANSISTOR DTA124ES	
Q52	8-729-900-63	TRANSISTOR DTA124ES	
Q53	8-729-900-63	TRANSISTOR DTA124ES	
Q54	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q55	8-729-600-19	TRANSISTOR 2SK381-A	
Q56	8-729-900-63	TRANSISTOR DTA124ES	
Q57	8-729-900-63	TRANSISTOR DTA124ES	
Q58	8-729-900-63	TRANSISTOR DTA124ES	
Q59	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q60	8-729-600-19	TRANSISTOR 2SK381-A	
Q71	8-729-384-48	TRANSISTOR 2SA844-E	
Q72	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q73	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q74	8-729-384-48	TRANSISTOR 2SA844-E	
Q75	8-729-800-10	TRANSISTOR 2SC3068	
Q76	8-729-900-63	TRANSISTOR DTA124ES	
Q77	8-729-900-63	TRANSISTOR DTA124ES	
Q78	8-729-900-89	TRANSISTOR DTC144ES	
Q81	8-729-384-48	TRANSISTOR 2SA844-E	
Q82	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q83	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q84	8-729-384-48	TRANSISTOR 2SA844-E	
Q85	8-729-800-10	TRANSISTOR 2SC3068	
<RESISTOR>			
R1	1-249-405-11	CARBON 100 5%	1/4W
R2	1-215-396-00	METAL 91 1%	1/4W
R3	1-215-431-00	METAL 2.7K 1%	1/4W
R4	1-249-419-11	CARBON 1.5K 5%	1/4W
R6	1-249-405-11	CARBON 100 5%	1/4W
R7	1-249-405-11	CARBON 100 5%	1/4W
R8	1-249-429-11	CARBON 10K 5%	1/4W
R10	1-247-830-11	CARBON 910 5%	1/4W
R11	1-249-417-11	CARBON 1K 5%	1/4W
R12	1-249-417-11	CARBON 1K 5%	1/4W
R13	1-215-462-00	METAL 51K 1%	1/4W
R14	1-249-426-11	CARBON 5.6K 5%	1/4W
R15	1-247-903-00	CARBON 1M 5%	1/4W
R16	1-215-477-00	METAL 220K 1%	1/4W
R17	1-249-429-11	CARBON 10K 5%	1/4W
R18	1-249-429-11	CARBON 10K 5%	1/4W
R19	1-249-417-11	CARBON 1K 5%	1/4W
R20	1-215-421-00	METAL 1K 1%	1/4W
R21	1-215-421-00	METAL 1K 1%	1/4W
R22	1-249-441-11	CARBON 100K 5%	1/4W
R23	1-215-409-00	METAL 330 1%	1/4W
R24	1-215-380-00	METAL 20 1%	1/4W
R25	1-215-380-00	METAL 20 1%	1/4W
R26	1-215-409-00	METAL 330 1%	1/4W
R27	1-249-429-11	CARBON 10K 5%	1/4W
R28	1-249-417-11	CARBON 1K 5%	1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK
R29	1-215-418-00	METAL 750 1%	1/4W
R30	1-249-422-11	CARBON 2.7K 5%	1/4W
R31	1-249-405-11	CARBON 100 5%	1/4W
R32	1-249-420-11	CARBON 1.8K 5%	1/4W
R33	1-249-429-11	CARBON 10K 5%	1/4W
R34	1-249-428-11	CARBON 8.2K 5%	1/4W
R35	1-249-417-11	CARBON 1K 5%	1/4W
R36	1-249-422-11	CARBON 2.7K 5%	1/4W
R37	1-249-405-11	CARBON 100 5%	1/4W
R40	1-249-425-11	CARBON 4.7K 5%	1/4W
R41	1-249-422-11	CARBON 2.7K 5%	1/4W
R42	1-249-417-11	CARBON 1K 5%	1/4W
R43	1-249-417-11	CARBON 1K 5%	1/4W
R44	1-249-431-11	CARBON 15K 5%	1/4W
R45	1-249-423-11	CARBON 3.3K 5%	1/4W
R46	1-249-417-11	CARBON 1K 5%	1/4W
R47	1-249-423-11	CARBON 3.3K 5%	1/4W
R48	1-249-422-11	CARBON 2.7K 5%	1/4W
R49	1-249-405-11	CARBON 100 5%	1/4W
R50	1-249-422-11	CARBON 2.7K 5%	1/4W
R51	1-247-903-00	CARBON 1M 5%	1/4W
R52	1-247-866-11	CARBON 30K 5%	1/4W
R53	1-215-445-00	METAL 10K 1%	1/4W
R54	1-249-420-11	CARBON 1.8K 5%	1/4W
R55	1-249-422-11	CARBON 2.7K 5%	1/4W
R56	1-249-405-11	CARBON 100 5%	1/4W
R57	1-249-422-11	CARBON 2.7K 5%	1/4W
R58	1-249-422-11	CARBON 2.7K 5%	1/4W
R59	1-249-422-11	CARBON 2.7K 5%	1/4W
R61	1-249-422-11	CARBON 2.7K 5%	1/4W
R62	1-249-417-11	CARBON 1K 5%	1/4W
R63	1-249-417-11	CARBON 1K 5%	1/4W
R64	1-249-431-11	CARBON 15K 5%	1/4W
R65	1-249-423-11	CARBON 3.3K 5%	1/4W
R66	1-249-417-11	CARBON 1K 5%	1/4W
R67	1-249-423-11	CARBON 3.3K 5%	1/4W
R68	1-249-422-11	CARBON 2.7K 5%	1/4W
R69	1-249-405-11	CARBON 100 5%	1/4W
R70	1-249-422-11	CARBON 2.7K 5%	1/4W
R71	1-247-903-00	CARBON 1M 5%	1/4W
R72	1-247-866-11	CARBON 30K 5%	1/4W
R73	1-215-445-00	METAL 10K 1%	1/4W
R74	1-249-420-11	CARBON 1.8K 5%	1/4W
R75	1-249-422-11	CARBON 2.7K 5%	1/4W
R76	1-249-405-11	CARBON 100 5%	1/4W
R77	1-249-422-11	CARBON 2.7K 5%	1/4W
R78	1-249-422-11	CARBON 2.7K 5%	1/4W
R79	1-249-422-11	CARBON 2.7K 5%	1/4W
R80	1-249-405-11	CARBON 100 5%	1/4W
R81	1-249-422-11	CARBON 2.7K 5%	1/4W
R82	1-247-903-00	CARBON 1M 5%	1/4W
R83	1-249-420-11	CARBON 1.8K 5%	1/4W
R84	1-249-405-11	CARBON 100 5%	1/4W
R85	1-247-866-11	CARBON 30K 5%	1/4W
R86	1-215-445-00	METAL 10K 1%	1/4W
R87	1-249-422-11	CARBON 2.7K 5%	1/4W
R88	1-215-430-00	METAL 2.4K 1%	1/4W
R89	1-215-443-00	METAL 8.2K 1%	1/4W
R90	1-249-430-11	CARBON 12K 5%	1/4W
R91	1-249-405-11	CARBON 100 5%	1/4W
R92	1-247-830-11	CARBON 910 5%	1/4W
R93	1-215-421-00	METAL 1K 1%	1/4W
R94	1-249-422-11	CARBON 2.7K 5%	1/4W
R98	1-249-422-11	CARBON 2.7K 5%	1/4W

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REF.NO.	PART NO.	DESCRIPTION		REMARK	REF.NO.	PART NO.	DESCRIPTION		REMARK
C104	1-124-915-11	ELECT	10MF	20%	16V	CP203	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C105	1-161-021-11	CERAMIC	0.047MF	10%	25V	CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C106	1-101-004-00	CERAMIC	0.01MF		50V	CP301	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V	CP302	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C108	1-101-004-00	CERAMIC	0.01MF		50V	CP303	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C109	1-101-004-00	CERAMIC	0.01MF		50V	CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
C110	1-101-880-00	CERAMIC	47PF	5%	50V				
C201	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C202	1-102-942-00	CERAMIC	5PF	0.5PF	50V				
C203	1-102-959-00	CERAMIC	22PF	5%	50V				
C204	1-124-915-11	ELECT	10MF	20%	16V				
C205	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C206	1-101-004-00	CERAMIC	0.01MF		50V				
C207	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C208	1-101-004-00	CERAMIC	0.01MF		50V				
C209	1-101-004-00	CERAMIC	0.01MF		50V				
C210	1-101-880-00	CERAMIC	47PF	5%	50V				
C301	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C302	1-102-942-00	CERAMIC	5PF	0.5PF	50V				
C303	1-102-959-00	CERAMIC	22PF	5%	50V				
C304	1-124-915-11	ELECT	10MF	20%	16V				
C305	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C306	1-101-004-00	CERAMIC	0.01MF		50V				
C307	1-161-021-11	CERAMIC	0.047MF	10%	25V				
C308	1-101-004-00	CERAMIC	0.01MF		50V				
C309	1-101-004-00	CERAMIC	0.01MF		50V				
C310	1-101-880-00	CERAMIC	47PF	5%	50V				
<COMPOSITION CIRCUIT BLOCK>									
CP1	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK		IC1	8-759-140-53	IC UPD4053BC	
CP2	1-232-727-11	COMPOSITION	CIRCUIT	BLOCK		IC2	8-759-140-53	IC UPD4053BC	
CP3	1-233-012-11	COMPOSITION	CIRCUIT	BLOCK		IC3	8-759-140-53	IC UPD4053BC	
CP5	1-233-012-11	COMPOSITION	CIRCUIT	BLOCK		IC4	8-759-140-53	IC UPD4053BC	
CP7	1-233-012-11	COMPOSITION	CIRCUIT	BLOCK		IC5	8-759-700-08	IC NJM4558S	
CP9	1-232-735-11	COMPOSITION	CIRCUIT	BLOCK		IC6	8-759-700-08	IC NJM4558S	
CP10	1-231-760-00	COMPOSITION	CIRCUIT	BLOCK		IC7	8-759-800-81	IC LA7016	
CP12	1-232-735-11	COMPOSITION	CIRCUIT	BLOCK		IC8	8-759-800-81	IC LA7016	
CP13	1-231-760-00	COMPOSITION	CIRCUIT	BLOCK		IC9	8-759-140-53	IC UPD4053BC	
CP15	1-232-735-11	COMPOSITION	CIRCUIT	BLOCK		IC10	8-759-140-53	IC UPD4053BC	
CP16	1-232-749-11	COMPOSITION	CIRCUIT	BLOCK		IC11	8-759-240-81	IC TC4081BP	
CP17	1-232-096-00	COMPOSITION	CIRCUIT	BLOCK		IC12	8-759-240-81	IC TC4081BP	
CP18	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK		IC13	8-759-040-01	IC MC14001BCP	
CP19	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK		IC14	8-759-207-73	IC TC4030BPHB	
CP20	1-232-736-11	COMPOSITION	CIRCUIT	BLOCK		IC101	8-766-001-49	TRANSISTOR TX-429M	
CP21	1-232-736-11	COMPOSITION	CIRCUIT	BLOCK		IC102	8-759-990-82	IC TL082CP	
CP22	1-232-745-11	COMPOSITION	CIRCUIT	BLOCK		IC201	8-766-001-49	TRANSISTOR TX-429M	
CP23	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK		IC202	8-759-990-82	IC TL082CP	
CP24	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK		IC301	8-766-001-49	TRANSISTOR TX-429M	
CP25	1-233-144-11	COMPOSITION	CIRCUIT	BLOCK		IC302	8-759-990-82	IC TL082CP	
CP26	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK					
CP27	1-232-177-00	COMPOSITION	CIRCUIT	BLOCK					
CP28	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK					
CP29	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK					
CP30	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK					
CP31	1-233-011-11	COMPOSITION	CIRCUIT	BLOCK					
CP32	1-232-737-11	COMPOSITION	CIRCUIT	BLOCK					
CP33	1-231-938-00	COMPOSITION	CIRCUIT	BLOCK					
CP101	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
CP102	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
CP103	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
CP104	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
CP201	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
CP202	1-232-726-11	COMPOSITION	CIRCUIT	BLOCK					
<DIODE>									
D1	8-719-911-19	DIODE	ISS119						
D101	8-719-911-19	DIODE	ISS119						
D102	8-719-911-19	DIODE	ISS119						
D201	8-719-911-19	DIODE	ISS119						
D202	8-719-911-19	DIODE	ISS119						
D301	8-719-911-19	DIODE	ISS119						
D302	8-719-911-19	DIODE	ISS119						
<IC>									
IC1	8-759-140-53	IC	UPD4053BC						
IC2	8-759-140-53	IC	UPD4053BC						
IC3	8-759-140-53	IC	UPD4053BC						
IC4	8-759-140-53	IC	UPD4053BC						
IC5	8-759-700-08	IC	NJM4558S						
IC6	8-759-700-08	IC	NJM4558S						
IC7	8-759-800-81	IC	LA7016						
IC8	8-759-800-81	IC	LA7016						
IC9	8-759-140-53	IC	UPD4053BC						
IC10	8-759-140-53	IC	UPD4053BC						
IC11	8-759-240-81	IC	TC4081BP						
IC12	8-759-240-81	IC	TC4081BP						
IC13	8-759-040-01	IC	MC14001BCP						
IC14	8-759-207-73	IC	TC4030BPHB						
IC101	8-766-001-49	TRANSISTOR	TX-429M						
IC102	8-759-990-82	IC	TL082CP						
IC201	8-766-001-49	TRANSISTOR	TX-429M						
IC202	8-759-990-82	IC	TL082CP						
IC301	8-766-001-49	TRANSISTOR	TX-429M						
IC302	8-759-990-82	IC	TL082CP						
<TRANSISTOR>									
Q1	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q2	8-729-105-71	TRANSISTOR	2SK523-K2						
Q3	8-729-384-48	TRANSISTOR	2SA844-E						
Q4	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q5	8-729-105-71	TRANSISTOR	2SK523-K2						
Q6	8-729-384-48	TRANSISTOR	2SA844-E						
Q7	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q8	8-729-105-71	TRANSISTOR	2SK523-K2						
Q9	8-729-384-48	TRANSISTOR	2SA844-E						
Q10	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q11	8-729-105-71	TRANSISTOR	2SK523-K2						
Q12	8-729-384-48	TRANSISTOR	2SA844-E						
Q13	8-729-384-48	TRANSISTOR	2SA844-E						
Q14	8-729-384-48	TRANSISTOR	2SA844-E						
Q15	8-729-384-48	TRANSISTOR	2SA844-E						
Q16	8-729-800-10	TRANSISTOR	2SC3068						
Q101	8-729-600-19	TRANSISTOR	2SK381-A						
Q102	8-729-384-48	TRANSISTOR	2SA844-E						
Q103	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q104	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q105	8-729-119-78	TRANSISTOR	2SC2785-HFE						
Q106	8-729-600-19	TRANSISTOR	2SK381-A						

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q107	8-729-600-19	TRANSISTOR 2SK381-A		R112	1-249-419-11	CARBON 1.5K 5%	1/4W
Q108	8-729-600-19	TRANSISTOR 2SK381-A		R113	1-249-405-11	CARBON 100 5%	1/4W
Q201	8-729-600-19	TRANSISTOR 2SK381-A		R114	1-215-445-00	METAL 10K 1%	1/4W
Q202	8-729-384-48	TRANSISTOR 2SA844-E		R115	1-215-445-00	METAL 10K 1%	1/4W
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE		R116	1-249-429-11	CARBON 10K 5%	1/4W
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE		R117	1-215-493-00	METAL 1M 1%	1/4W
Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE		R120	1-215-451-00	METAL 18K 1%	1/4W
Q206	8-729-600-19	TRANSISTOR 2SK381-A		R121	1-215-453-00	METAL 22K 1%	1/4W
Q207	8-729-600-19	TRANSISTOR 2SK381-A		R201	1-247-903-00	CARBON 1M 5%	1/4W
Q208	8-729-600-19	TRANSISTOR 2SK381-A		R202	1-249-431-11	CARBON 15K 5%	1/4W
Q301	8-729-600-19	TRANSISTOR 2SK381-A		R203	1-249-419-11	CARBON 1.5K 5%	1/4W
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R204	1-249-430-11	CARBON 12K 5%	1/4W
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE		R205	1-249-409-11	CARBON 220 5%	1/4W
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE		R206	1-249-419-11	CARBON 1.5K 5%	1/4W
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE		R207	1-215-425-00	METAL 1.5K 1%	1/4W
Q306	8-729-600-19	TRANSISTOR 2SK381-A		R208	1-249-415-11	CARBON 680 5%	1/4W
Q307	8-729-600-19	TRANSISTOR 2SK381-A		R209	1-249-419-11	CARBON 1.5K 5%	1/4W
Q308	8-729-600-19	TRANSISTOR 2SK381-A		R210	1-215-427-00	METAL 1.8K 1%	1/4W
<RESISTOR>				R211	1-215-453-00	METAL 22K 1%	1/4W
R1	1-249-433-11	CARBON 22K 5%	1/4W	R212	1-249-419-11	CARBON 1.5K 5%	1/4W
R3	1-249-427-11	CARBON 6.8K 5%	1/4W	R213	1-249-405-11	CARBON 100 5%	1/4W
R5	1-249-422-11	CARBON 2.7K 5%	1/4W	R214	1-215-445-00	METAL 10K 1%	1/4W
R6	1-249-433-11	CARBON 22K 5%	1/4W	R215	1-215-445-00	METAL 10K 1%	1/4W
R7	1-249-433-11	CARBON 22K 5%	1/4W	R216	1-249-429-11	CARBON 10K 5%	1/4W
R9	1-249-427-11	CARBON 6.8K 5%	1/4W	R217	1-215-455-00	METAL 27K 1%	1/4W
R11	1-249-422-11	CARBON 2.7K 5%	1/4W	R301	1-247-903-00	CARBON 1M 5%	1/4W
R12	1-249-433-11	CARBON 22K 5%	1/4W	R302	1-249-431-11	CARBON 15K 5%	1/4W
R13	1-249-433-11	CARBON 22K 5%	1/4W	R303	1-249-419-11	CARBON 1.5K 5%	1/4W
R15	1-249-427-11	CARBON 6.8K 5%	1/4W	R304	1-249-430-11	CARBON 12K 5%	1/4W
R17	1-249-422-11	CARBON 2.7K 5%	1/4W	R305	1-249-409-11	CARBON 220 5%	1/4W
R18	1-249-433-11	CARBON 22K 5%	1/4W	R306	1-249-419-11	CARBON 1.5K 5%	1/4W
R19	1-249-433-11	CARBON 22K 5%	1/4W	R307	1-215-425-00	METAL 1.5K 1%	1/4W
R21	1-249-427-11	CARBON 6.8K 5%	1/4W	R308	1-249-415-11	CARBON 680 5%	1/4W
R23	1-249-422-11	CARBON 2.7K 5%	1/4W	R309	1-249-419-11	CARBON 1.5K 5%	1/4W
R31	1-249-405-11	CARBON 100 5%	1/4W	R310	1-215-427-00	METAL 1.8K 1%	1/4W
R32	1-249-405-11	CARBON 100 5%	1/4W	R311	1-215-453-00	METAL 22K 1%	1/4W
R33	1-249-433-11	CARBON 22K 5%	1/4W	R312	1-249-419-11	CARBON 1.5K 5%	1/4W
R34	1-249-422-11	CARBON 2.7K 5%	1/4W	R313	1-249-405-11	CARBON 100 5%	1/4W
R35	1-249-405-11	CARBON 100 5%	1/4W	R314	1-215-445-00	METAL 10K 1%	1/4W
R36	1-249-405-11	CARBON 100 5%	1/4W	R315	1-215-445-00	METAL 10K 1%	1/4W
R37	1-249-433-11	CARBON 22K 5%	1/4W	R316	1-249-429-11	CARBON 10K 5%	1/4W
R38	1-249-422-11	CARBON 2.7K 5%	1/4W	<VARIABLE RESISTOR>			
R39	1-249-433-11	CARBON 22K 5%	1/4W	RV1	1-237-505-21	RES, ADJ, CERMET 50K	
R40	1-249-422-11	CARBON 2.7K 5%	1/4W	RV2	1-237-505-21	RES, ADJ, CERMET 50K	
R52	1-249-417-11	CARBON 1K 5%	1/4W	RV3	1-237-505-21	RES, ADJ, CERMET 50K	
R53	1-249-425-11	CARBON 4.7K 5%	1/4W	<SWITCH>			
R54	1-249-441-11	CARBON 100K 5%	1/4W	S1	1-570-857-11	SWITCH, SLIDE	
R63	1-249-417-11	CARBON 1K 5%	1/4W	S2	1-570-851-11	SWITCH, SLIDE	
R64	1-249-437-11	CARBON 47K 5%	1/4W	*****			
R65	1-249-433-11	CARBON 22K 5%	1/4W	*A-1135-360-A BI BOARD, COMPLETE			
R66	1-249-417-11	CARBON 1K 5%	1/4W	*****			
R101	1-247-903-00	CARBON 1M 5%	1/4W	*4-353-708-00 HOOK, FINGER			
R102	1-249-431-11	CARBON 15K 5%	1/4W	<CAPACITOR>			
R103	1-249-419-11	CARBON 1.5K 5%	1/4W	C1	1-130-481-00	MYLAR 0.0068MF	5% 50V
R104	1-249-430-11	CARBON 12K 5%	1/4W	C2	1-136-165-00	FILM 0.1MF	5% 50V
R105	1-249-409-11	CARBON 220 5%	1/4W	C3	1-123-369-00	ELECT 4.7MF	20% 25V
R106	1-249-419-11	CARBON 1.5K 5%	1/4W				
R107	1-215-425-00	METAL 1.5K 1%	1/4W				
R108	1-249-415-11	CARBON 680 5%	1/4W				
R109	1-249-419-11	CARBON 1.5K 5%	1/4W				
R110	1-215-427-00	METAL 1.8K 1%	1/4W				
R111	1-215-453-00	METAL 22K 1%	1/4W				

BI

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK				
C4	1-123-369-00	ELECT	4.7MF	20%	25V	C210	1-136-161-00	FILM	0.047MF	5%	50V
C5	1-102-973-00	CERAMIC	100PF	5%	50V	C214	1-102-951-00	CERAMIC	15PF	5%	50V
C7	1-126-233-11	ELECT	22MF	20%	25V	C215	1-136-153-00	FILM	0.01MF	5%	50V
C8	1-123-369-00	ELECT	4.7MF	20%	25V	C216	1-102-973-00	CERAMIC	100PF	5%	50V
C11	1-124-915-11	ELECT	10MF	20%	16V	C217	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-101-004-00	CERAMIC	0.01MF		50V	C218	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-101-004-00	CERAMIC	0.01MF		50V	C219	1-102-953-00	CERAMIC	18PF	5%	50V
C14	1-101-004-00	CERAMIC	0.01MF		50V	C220	1-102-038-00	CERAMIC	0.001MF		500V
C15	1-126-233-11	ELECT	22MF	20%	16V	C222	1-102-943-00	CERAMIC	6PF	0.5PF	50V
C16	1-124-915-11	ELECT	10MF	20%	16V	C301	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V	C302	1-124-791-11	ELECT	1MF	20%	50V
C18	1-101-004-00	CERAMIC	0.01MF		50V	C304	1-124-915-11	ELECT	10MF	20%	16V
C19	1-101-004-00	CERAMIC	0.01MF		50V	C305	1-101-004-00	CERAMIC	0.01MF		50V
C41	1-124-034-51	ELECT	33MF	20%	16V	C306	1-136-161-00	FILM	0.047MF	5%	50V
C42	1-124-034-51	ELECT	33MF	20%	16V	C307	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C43	1-124-034-51	ELECT	33MF	20%	16V	C308	1-101-880-00	CERAMIC	47PF	5%	50V
C44	1-124-034-51	ELECT	33MF	20%	16V	C309	1-136-161-00	FILM	0.047MF	5%	50V
C45	1-124-034-51	ELECT	33MF	20%	16V	C310	1-136-161-00	FILM	0.047MF	5%	50V
C46	1-124-034-51	ELECT	33MF	20%	16V	C314	1-102-951-00	CERAMIC	15PF	5%	50V
C51	1-101-004-00	CERAMIC	0.01MF		50V	C315	1-136-153-00	FILM	0.01MF	5%	50V
C52	1-101-004-00	CERAMIC	0.01MF		50V	C316	1-102-973-00	CERAMIC	100PF	5%	50V
C53	1-101-004-00	CERAMIC	0.01MF		50V	C317	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-101-004-00	CERAMIC	0.01MF		50V	C318	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-101-004-00	CERAMIC	0.01MF		50V	C319	1-102-953-00	CERAMIC	18PF	5%	50V
C56	1-101-004-00	CERAMIC	0.01MF		50V	C320	1-102-038-00	CERAMIC	0.001MF		500V
C57	1-101-004-00	CERAMIC	0.01MF		50V	C322	1-102-943-00	CERAMIC	6PF	0.5PF	50V
C71	1-124-034-51	ELECT	33MF	20%	16V	<COMPOSITION CIRCUIT BLOCK>					
C72	1-124-034-51	ELECT	33MF	20%	16V	CP3	1-231-765-00	COMPOSITION CIRCUIT BLOCK			
C73	1-124-034-51	ELECT	33MF	20%	16V	CP4	1-231-765-00	COMPOSITION CIRCUIT BLOCK			
C74	1-124-034-51	ELECT	33MF	20%	16V	CP5	1-231-765-00	COMPOSITION CIRCUIT BLOCK			
C75	1-124-034-51	ELECT	33MF	20%	16V	CP6	1-231-765-00	COMPOSITION CIRCUIT BLOCK			
C76	1-124-034-51	ELECT	33MF	20%	16V	CP7	1-231-765-00	COMPOSITION CIRCUIT BLOCK			
C81	1-101-004-00	CERAMIC	0.01MF		50V	CP101	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C82	1-101-004-00	CERAMIC	0.01MF		50V	CP102	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C83	1-101-004-00	CERAMIC	0.01MF		50V	CP103	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C84	1-101-004-00	CERAMIC	0.01MF		50V	CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK			
C85	1-101-004-00	CERAMIC	0.01MF		50V	CP201	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C86	1-101-004-00	CERAMIC	0.01MF		50V	CP202	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C87	1-101-004-00	CERAMIC	0.01MF		50V	CP203	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C101	1-101-004-00	CERAMIC	0.01MF		50V	CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK			
C102	1-124-791-11	ELECT	1MF	20%	50V	CP301	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C104	1-124-915-11	ELECT	10MF	20%	16V	CP302	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C105	1-101-004-00	CERAMIC	0.01MF		50V	CP303	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
C106	1-136-161-00	FILM	0.047MF	5%	50V	CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK			
C107	1-102-937-00	CERAMIC	4PF	0.25PF	50V	<DIODE>					
C108	1-101-880-00	CERAMIC	47PF	5%	50V	D1	8-719-911-19	DIODE	1SS119		
C109	1-136-161-00	FILM	0.047MF	5%	50V	D2	8-719-911-19	DIODE	1SS119		
C110	1-136-161-00	FILM	0.047MF	5%	50V	D4	8-719-911-19	DIODE	1SS119		
C114	1-102-951-00	CERAMIC	15PF	5%	50V	D5	8-719-911-19	DIODE	1SS119		
C115	1-136-153-00	FILM	0.01MF	5%	50V	D6	8-719-110-31	DIODE	RD12ESB2		
C116	1-102-973-00	CERAMIC	100PF	5%	50V	D7	8-719-911-19	DIODE	1SS119		
C117	1-101-004-00	CERAMIC	0.01MF		50V	D8	8-719-911-19	DIODE	1SS119		
C118	1-101-004-00	CERAMIC	0.01MF		50V	D101	8-719-911-19	DIODE	1SS119		
C119	1-102-953-00	CERAMIC	18PF	5%	50V	D102	8-719-016-42	DIODE	MC932		
C120	1-102-038-00	CERAMIC	0.001MF		500V	D103	8-719-109-74	DIODE	RD4.3ESB1		
C122	1-102-943-00	CERAMIC	6PF	0.5PF	50V	D104	8-719-911-19	DIODE	1SS119		
C201	1-101-004-00	CERAMIC	0.01MF		50V	D105	8-719-109-93	DIODE	RD6.2ESB2		
C202	1-124-791-11	ELECT	1MF	20%	50V	D201	8-719-911-19	DIODE	1SS119		
C204	1-124-915-11	ELECT	10MF	20%	16V	D202	8-719-016-42	DIODE	MC932		
C205	1-101-004-00	CERAMIC	0.01MF		50V	D203	8-719-109-74	DIODE	RD4.3ESB1		
C206	1-136-161-00	FILM	0.047MF	5%	50V						
C207	1-102-937-00	CERAMIC	4PF	0.25PF	50V						
C208	1-101-880-00	CERAMIC	47PF	5%	50V						
C209	1-136-161-00	FILM	0.047MF	5%	50V						

7. ELECTRICAL PARTS LIST



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D204	8-719-911-19	DIODE 1SS119		Q307	8-729-266-82	TRANSISTOR 2SC2668-0	
D205	8-719-109-93	DIODE RD6.2ESB2		Q308	8-729-384-48	TRANSISTOR 2SA844-E	
D301	8-719-911-19	DIODE 1SS119		Q309	8-729-600-19	TRANSISTOR 2SK381-A	
D302	8-719-016-42	DIODE MC932		Q310	8-729-600-19	TRANSISTOR 2SK381-A	
D303	8-719-109-74	DIODE RD4.3ESB1		Q313	8-729-600-19	TRANSISTOR 2SK381-A	
D304	8-719-911-19	DIODE 1SS119		Q314	8-729-200-17	TRANSISTOR 2SA1091-0	
D305	8-719-109-93	DIODE RD6.2ESB2					
<IC>				<RESISTOR>			
IC1	8-759-145-58	IC UPC4558C		R1	1-247-903-00	CARBON 1M 5% 1/4W	
IC101	8-759-140-53	IC UPD4053BC		R2	1-249-429-11	CARBON 10K 5% 1/4W	
IC102	8-766-001-49	TRANSISTOR TX-429M		R3	1-215-493-00	METAL 1M 1% 1/4W	
IC103	8-759-990-82	IC TL082CP		R4	1-215-469-00	METAL 100K 1% 1/4W	
IC104	8-759-990-82	IC TL082CP		R5	1-249-435-11	CARBON 33K 5% 1/4W	
IC105	8-759-990-82	IC TL082CP		R8	1-249-441-11	CARBON 100K 5% 1/4W	
IC201	8-759-140-53	IC UPD4053BC		R9	1-249-424-11	CARBON 3.9K 5% 1/4W	
IC202	8-766-001-49	TRANSISTOR TX-429M		R10	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC203	8-759-990-82	IC TL082CP		R11	1-249-435-11	CARBON 33K 5% 1/4W	
IC204	8-759-990-82	IC TL082CP		R12	1-249-429-11	CARBON 10K 5% 1/4W	
IC205	8-759-990-82	IC TL082CP		R13	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC301	8-759-140-53	IC UPD4053BC		R14	1-249-435-11	CARBON 33K 5% 1/4W	
IC302	8-766-001-49	TRANSISTOR TX-429M		R15	1-249-429-11	CARBON 10K 5% 1/4W	
IC303	8-759-990-82	IC TL082CP		R23	1-249-417-11	CARBON 1K 5% 1/4W	
IC304	8-759-990-82	IC TL082CP		R24	1-249-417-11	CARBON 1K 5% 1/4W	
IC305	8-759-990-82	IC TL082CP		R25	1-249-417-11	CARBON 1K 5% 1/4W	
<TRANSISTOR>				R31	1-249-430-11	CARBON 12K 5% 1/4W	
Q1	8-729-900-74	TRANSISTOR DTC143TS		R32	1-249-436-11	CARBON 39K 5% 1/4W	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R33	1-249-430-11	CARBON 12K 5% 1/4W	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R51	1-249-417-11	CARBON 1K 5% 1/4W	
Q11	8-729-201-05	TRANSISTOR 2SC2878-B		R52	1-249-417-11	CARBON 1K 5% 1/4W	
Q12	8-729-201-05	TRANSISTOR 2SC2878-B		R53	1-249-417-11	CARBON 1K 5% 1/4W	
Q13	8-729-201-05	TRANSISTOR 2SC2878-B		R54	1-249-431-11	CARBON 15K 5% 1/4W	
Q14	8-729-201-05	TRANSISTOR 2SC2878-B		R55	1-249-437-11	CARBON 47K 5% 1/4W	
Q15	8-729-900-65	TRANSISTOR DTA144ES		R56	1-249-431-11	CARBON 15K 5% 1/4W	
Q101	8-729-384-48	TRANSISTOR 2SA844-E		R57	1-249-431-11	CARBON 15K 5% 1/4W	
Q102	8-729-384-48	TRANSISTOR 2SA844-E		R58	1-249-439-11	CARBON 68K 5% 1/4W	
Q103	8-729-384-48	TRANSISTOR 2SA844-E		R60	1-215-465-00	METAL 68K 1% 1/4W	
Q105	8-729-600-19	TRANSISTOR 2SK381-A		R61	1-215-445-00	METAL 10K 1% 1/4W	
Q106	8-729-384-48	TRANSISTOR 2SA844-E		R101	1-249-441-11	CARBON 100K 5% 1/4W	
Q107	8-729-266-82	TRANSISTOR 2SC2668-0		R102	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q108	8-729-384-48	TRANSISTOR 2SA844-E		R104	1-215-469-00	METAL 100K 1% 1/4W	
Q109	8-729-600-19	TRANSISTOR 2SK381-A		R105	1-215-477-00	METAL 220K 1% 1/4W	
Q110	8-729-600-19	TRANSISTOR 2SK381-A		R106	1-215-427-00	METAL 1.8K 1% 1/4W	
Q113	8-729-600-19	TRANSISTOR 2SK381-A		R107	1-249-435-11	CARBON 33K 5% 1/4W	
Q114	8-729-200-17	TRANSISTOR 2SA1091-0		R108	1-249-430-11	CARBON 12K 5% 1/4W	
Q201	8-729-384-48	TRANSISTOR 2SA844-E		R109	1-249-417-11	CARBON 1K 5% 1/4W	
Q202	8-729-384-48	TRANSISTOR 2SA844-E		R110	1-249-441-11	CARBON 100K 5% 1/4W	
Q203	8-729-384-48	TRANSISTOR 2SA844-E		R111	1-249-417-11	CARBON 1K 5% 1/4W	
Q205	8-729-600-19	TRANSISTOR 2SK381-A		R112	1-249-417-11	CARBON 1K 5% 1/4W	
Q206	8-729-384-48	TRANSISTOR 2SA844-E		R113	1-247-903-00	CARBON 1M 5% 1/4W	
Q207	8-729-266-82	TRANSISTOR 2SC2668-0		R114	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q208	8-729-384-48	TRANSISTOR 2SA844-E		R115	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q209	8-729-600-19	TRANSISTOR 2SK381-A		R116	1-249-424-11	CARBON 3.9K 5% 1/4W	
Q210	8-729-600-19	TRANSISTOR 2SK381-A		R117	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q213	8-729-600-19	TRANSISTOR 2SK381-A		R118	1-215-421-00	METAL 1K 1% 1/4W	
Q214	8-729-200-17	TRANSISTOR 2SA1091-0		R119	1-249-405-11	CARBON 100 5% 1/4W	
Q301	8-729-384-48	TRANSISTOR 2SA844-E		R120	1-249-405-11	CARBON 100 5% 1/4W	
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R121	1-249-409-11	CARBON 220 5% 1/4W	
Q303	8-729-384-48	TRANSISTOR 2SA844-E		R122	1-215-427-00	METAL 1.8K 1% 1/4W	
Q305	8-729-600-19	TRANSISTOR 2SK381-A		R123	1-249-429-11	CARBON 10K 5% 1/4W	
Q306	8-729-384-48	TRANSISTOR 2SA844-E		R124	1-249-429-11	CARBON 10K 5% 1/4W	
				R125	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R127	1-215-453-00	METAL 22K 1% 1/4W	



BI

BJ

REF.NO.	PART NO.	DESCRIPTION			
R128	1-215-445-00	METAL	10K	1%	1/4W
R136	1-215-477-00	METAL	220K	1%	1/4W
R137	1-249-417-11	CARBON	1K	5%	1/4W
R138	1-249-441-11	CARBON	100K	5%	1/4W
R140	1-249-429-11	CARBON	10K	5%	1/4W
R141	1-215-469-00	METAL	100K	1%	1/4W
R142	1-215-455-00	METAL	27K	1%	1/4W
R143	1-215-488-00	METAL	620K	1%	1/4W
R144	1-249-434-11	CARBON	27K	5%	1/4W
R146	1-249-417-11	CARBON	1K	5%	1/4W
R147	1-249-405-11	CARBON	100	5%	1/4W
R201	1-249-441-11	CARBON	100K	5%	1/4W
R202	1-249-421-11	CARBON	2.2K	5%	1/4W
R204	1-215-469-00	METAL	100K	1%	1/4W
R205	1-215-477-00	METAL	220K	1%	1/4W
R206	1-215-427-00	METAL	1.8K	1%	1/4W
R207	1-249-435-11	CARBON	33K	5%	1/4W
R208	1-249-430-11	CARBON	12K	5%	1/4W
R209	1-249-417-11	CARBON	1K	5%	1/4W
R210	1-249-441-11	CARBON	100K	5%	1/4W
R211	1-249-417-11	CARBON	1K	5%	1/4W
R212	1-249-417-11	CARBON	1K	5%	1/4W
R213	1-247-903-00	CARBON	1M	5%	1/4W
R214	1-249-419-11	CARBON	1.5K	5%	1/4W
R215	1-249-419-11	CARBON	1.5K	5%	1/4W
R216	1-249-424-11	CARBON	3.9K	5%	1/4W
R217	1-249-419-11	CARBON	1.5K	5%	1/4W
R218	1-215-421-00	METAL	1K	1%	1/4W
R219	1-249-405-11	CARBON	100	5%	1/4W
R220	1-249-405-11	CARBON	100	5%	1/4W
R221	1-249-409-11	CARBON	220	5%	1/4W
R222	1-215-427-00	METAL	1.8K	1%	1/4W
R223	1-249-429-11	CARBON	10K	5%	1/4W
R224	1-249-429-11	CARBON	10K	5%	1/4W
R225	1-249-422-11	CARBON	2.7K	5%	1/4W
R227	1-215-453-00	METAL	22K	1%	1/4W
R228	1-215-445-00	METAL	10K	1%	1/4W
R236	1-215-477-00	METAL	220K	1%	1/4W
R237	1-249-417-11	CARBON	1K	5%	1/4W
R238	1-249-441-11	CARBON	100K	5%	1/4W
R240	1-249-429-11	CARBON	10K	5%	1/4W
R241	1-215-469-00	METAL	100K	1%	1/4W
R242	1-215-455-00	METAL	27K	1%	1/4W
R243	1-215-488-00	METAL	620K	1%	1/4W
R244	1-249-434-11	CARBON	27K	5%	1/4W
R246	1-249-417-11	CARBON	1K	5%	1/4W
R247	1-249-405-11	CARBON	100	5%	1/4W
R301	1-249-441-11	CARBON	100K	5%	1/4W
R302	1-249-421-11	CARBON	2.2K	5%	1/4W
R304	1-215-469-00	METAL	100K	1%	1/4W
R305	1-215-477-00	METAL	220K	1%	1/4W
R306	1-215-427-00	METAL	1.8K	1%	1/4W
R307	1-249-435-11	CARBON	33K	5%	1/4W
R308	1-249-430-11	CARBON	12K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-249-441-11	CARBON	100K	5%	1/4W
R311	1-249-417-11	CARBON	1K	5%	1/4W
R312	1-249-417-11	CARBON	1K	5%	1/4W
R313	1-247-903-00	CARBON	1M	5%	1/4W
R314	1-249-419-11	CARBON	1.5K	5%	1/4W
R315	1-249-419-11	CARBON	1.5K	5%	1/4W
R316	1-249-424-11	CARBON	3.9K	5%	1/4W
R317	1-249-419-11	CARBON	1.5K	5%	1/4W
R318	1-215-421-00	METAL	1K	1%	1/4W

REMARK	REF.NO.	PART NO.	DESCRIPTION			REMARK
	R319	1-249-405-11	CARBON	100	5%	1/4W
	R320	1-249-405-11	CARBON	100	5%	1/4W
	R321	1-249-409-11	CARBON	220	5%	1/4W
	R322	1-215-427-00	METAL	1.8K	1%	1/4W
	R323	1-249-429-11	CARBON	10K	5%	1/4W
	R324	1-249-429-11	CARBON	10K	5%	1/4W
	R325	1-249-422-11	CARBON	2.7K	5%	1/4W
	R327	1-215-453-00	METAL	22K	1%	1/4W
	R328	1-215-445-00	METAL	10K	1%	1/4W
	R336	1-215-477-00	METAL	220K	1%	1/4W
	R337	1-249-417-11	CARBON	1K	5%	1/4W
	R338	1-249-441-11	CARBON	100K	5%	1/4W
	R340	1-249-429-11	CARBON	10K	5%	1/4W
	R341	1-215-469-00	METAL	100K	1%	1/4W
	R342	1-215-455-00	METAL	27K	1%	1/4W
	R343	1-215-488-00	METAL	620K	1%	1/4W
	R344	1-249-434-11	CARBON	27K	5%	1/4W
	R346	1-249-417-11	CARBON	1K	5%	1/4W
	R347	1-249-405-11	CARBON	100	5%	1/4W
*****						
	*A-1135-361-A		BJ BOARD, COMPLETE			
			*****			
	*4-353-708-00		HOOK, FINGER			
	<CAPACITOR>					
	C1	1-101-361-00	CERAMIC	150PF	5%	50V
	C2	1-101-361-00	CERAMIC	150PF	5%	50V
	C4	1-102-821-00	CERAMIC	360PF	5%	50V
	C5	1-130-473-00	MYLAR	0.0015MF	5%	50V
	C11	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
	C12	1-102-525-11	CERAMIC	68PF	5%	50V
	C14	1-102-525-11	CERAMIC	68PF	5%	50V
	C15	1-102-525-11	CERAMIC	68PF	5%	50V
	C16	1-102-525-11	CERAMIC	68PF	5%	50V
	C17	1-102-525-11	CERAMIC	68PF	5%	50V
	C18	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
	C19	1-102-973-00	CERAMIC	100PF	5%	50V
	C20	1-102-525-11	CERAMIC	68PF	5%	50V
	C21	1-101-361-00	CERAMIC	150PF	5%	50V
	C22	1-101-890-00	CERAMIC	75PF	5%	50V
	C23	1-102-965-00	CERAMIC	39PF	5%	50V
	C25	1-102-946-00	CERAMIC	9PF	1PF	50V
	C26	1-102-944-00	CERAMIC	7PF	1PF	50V
	C27	1-101-361-00	CERAMIC	150PF	5%	50V
	C28	1-130-471-00	MYLAR	0.001MF	5%	50V
	C29	1-130-471-00	MYLAR	0.001MF	5%	50V
	C30	1-101-004-00	CERAMIC	0.01MF		50V
	C31	1-101-361-00	CERAMIC	150PF	5%	50V
	C32	1-101-361-00	CERAMIC	150PF	5%	50V
	C33	1-101-361-00	CERAMIC	150PF	5%	50V
	C34	1-101-361-00	CERAMIC	150PF	5%	50V
	C35	1-130-471-00	MYLAR	0.001MF	5%	50V
	C36	1-102-824-00	CERAMIC	470PF	5%	50V
	C37	1-124-791-11	ELECT	1MF	20%	50V
	C38	1-101-004-00	CERAMIC	0.01MF		50V
	C39	1-101-004-00	CERAMIC	0.01MF		50V
	C40	1-102-074-00	CERAMIC	0.001MF	10%	50V
	C61	1-101-888-00	CERAMIC	68PF	5%	50V
	C62	1-101-880-00	CERAMIC	47PF	5%	50V
	C63	1-101-888-00	CERAMIC	68PF	5%	50V

REF.NO.	PART NO.	DESCRIPTION			REMARK	REF.NO.	PART NO.	DESCRIPTION			REMARK
C64	1-101-880-00	CERAMIC	47PF	5%	50V	IC22	8-759-240-71	IC TC4071BP			
C65	1-102-820-00	CERAMIC	330PF	5%	50V	IC23	8-759-040-73	IC MC14073BCP			
C66	1-101-004-00	CERAMIC	0.01MF		50V	IC24	8-759-000-51	IC MC14069UBCP			
C67	1-101-880-00	CERAMIC	47PF	5%	50V	IC25	8-759-000-51	IC MC14069UBCP			
C100	1-124-910-11	ELECT	47MF	20%	16V						
C102	1-124-034-51	ELECT	33MF	20%	16V	IC26	8-759-041-75	IC MC14175BPC			
C106	1-101-004-00	CERAMIC	0.01MF		50V	IC27	8-759-140-53	IC UPD4053BC			
C108	1-124-034-51	ELECT	33MF	20%	16V	IC28	8-759-000-77	IC MC14520BCP			
C109	1-101-004-00	CERAMIC	0.01MF		50V	IC29	8-759-345-38	IC HD14538BP			
C110	1-101-004-00	CERAMIC	0.01MF		50V						
								<COIL>			
C111	1-101-004-00	CERAMIC	0.01MF		50V	L1	1-408-098-00	INDUCTOR	560UH		
C112	1-101-004-00	CERAMIC	0.01MF		50V	L2	1-408-098-00	INDUCTOR	560UH		
C113	1-101-004-00	CERAMIC	0.01MF		50V	L3	9-910-999-31	INDUCTOR	680UH		
C114	1-124-915-11	ELECT	10MF	20%	16V						
C115	1-101-004-00	CERAMIC	0.01MF		50V						
								<TRANSISTOR>			
C116	1-101-004-00	CERAMIC	0.01MF		50V	Q14	8-729-119-78	TRANSISTOR	2SC2785-HFE		
C117	1-101-004-00	CERAMIC	0.01MF		50V	Q15	8-729-119-78	TRANSISTOR	2SC2785-HFE		
C118	1-124-915-11	ELECT	10MF	20%	16V	Q16	8-729-119-78	TRANSISTOR	2SC2785-HFE		
C120	1-101-004-00	CERAMIC	0.01MF		50V	Q17	8-729-119-78	TRANSISTOR	2SC2785-HFE		
C121	1-101-004-00	CERAMIC	0.01MF		50V	Q18	8-729-119-78	TRANSISTOR	2SC2785-HFE		
						Q19	8-729-119-76	TRANSISTOR	2SA1175-HFE		
C122	1-101-004-00	CERAMIC	0.01MF		50V	Q20	8-729-119-78	TRANSISTOR	2SC2785-HFE		
C130	1-124-034-51	ELECT	33MF	20%	16V	Q21	8-729-119-78	TRANSISTOR	2SC2785-HFE		
						Q22	8-729-119-78	TRANSISTOR	2SC2785-HFE		
		<COMPOSITION CIRCUIT BLOCK>				Q23	8-729-119-76	TRANSISTOR	2SA1175-HFE		
CP1	1-232-738-11	COMPOSITION CIRCUIT BLOCK				Q24	8-729-119-78	TRANSISTOR	2SC2785-HFE		
CP2	1-232-738-11	COMPOSITION CIRCUIT BLOCK				Q25	8-729-119-78	TRANSISTOR	2SC2785-HFE		
CP3	1-232-738-11	COMPOSITION CIRCUIT BLOCK				Q26	8-729-119-78	TRANSISTOR	2SC2785-HFE		
CP4	1-232-738-11	COMPOSITION CIRCUIT BLOCK									
CP5	1-232-738-11	COMPOSITION CIRCUIT BLOCK									
								<RESISTOR>			
		<DIODE>				R2	1-215-439-00	METAL	5.6K	1%	1/4W
D1	8-719-911-19	DIODE	ISS119			R3	1-249-422-11	CARBON	2.7K	5%	1/4W
D2	8-719-911-19	DIODE	ISS119			R4	1-215-449-00	METAL	15K	1%	1/4W
D3	8-719-911-19	DIODE	ISS119			R5	1-249-441-11	CARBON	100K	5%	1/4W
D7	8-719-911-19	DIODE	ISS119			R6	1-249-425-11	CARBON	4.7K	5%	1/4W
D8	8-719-911-19	DIODE	ISS119								
D9	8-719-911-19	DIODE	ISS119			R7	1-215-439-00	METAL	5.6K	1%	1/4W
D11	8-719-016-42	DIODE	MC932			R37	1-249-441-11	CARBON	100K	5%	1/4W
						R38	1-215-454-00	METAL	24K	1%	1/4W
		<IC>				R39	1-249-422-11	CARBON	2.7K	5%	1/4W
IC1	8-759-345-38	IC	HD14538BP			R42	1-249-433-11	CARBON	22K	5%	1/4W
IC2	8-759-040-01	IC	MC14001BCP			R43	1-247-876-11	CARBON	75K	5%	1/4W
IC3	8-759-240-40	IC	TC4040BP			R44	1-249-429-11	CARBON	10K	5%	1/4W
IC4	8-759-240-40	IC	TC4040BP			R45	1-249-441-11	CARBON	100K	5%	1/4W
IC5	8-759-000-35	IC	MC14027BCP			R46	1-249-441-11	CARBON	100K	5%	1/4W
						R47	1-247-862-11	CARBON	20K	5%	1/4W
IC6	8-759-000-35	IC	MC14027BCP			R48	1-215-467-00	METAL	82K	1%	1/4W
IC7	8-759-000-35	IC	MC14027BCP			R49	1-249-422-11	CARBON	2.7K	5%	1/4W
IC8	8-759-000-35	IC	MC14027BCP			R50	1-215-469-00	METAL	100K	1%	1/4W
IC9	8-759-000-35	IC	MC14027BCP			R51	1-215-445-00	METAL	10K	1%	1/4W
IC10	8-759-345-38	IC	HD14538BP			R52	1-247-885-00	CARBON	180K	5%	1/4W
						R53	1-215-449-00	METAL	15K	1%	1/4W
IC11	8-759-345-38	IC	HD14538BP			R54	1-249-422-11	CARBON	2.7K	5%	1/4W
IC12	8-759-345-38	IC	HD14538BP			R56	1-249-434-11	CARBON	27K	5%	1/4W
IC13	8-759-040-01	IC	MC14001BCP			R57	1-249-422-11	CARBON	2.7K	5%	1/4W
IC14	8-759-040-01	IC	MC14001BCP			R58	1-249-425-11	CARBON	4.7K	5%	1/4W
IC15	8-759-240-71	IC	TC4071BP								
						R59	1-247-836-11	CARBON	1.6K	5%	1/4W
IC16	8-759-040-11	IC	MC14011BCP			R60	1-249-427-11	CARBON	6.8K	5%	1/4W
IC17	8-759-040-11	IC	MC14011BCP			R61	1-215-449-00	METAL	15K	1%	1/4W
IC18	8-759-000-32	IC	MC14023BCP			R62	1-249-433-11	CARBON	22K	5%	1/4W
IC19	8-759-240-81	IC	TC4081BP			R63	1-249-425-11	CARBON	4.7K	5%	1/4W
IC20	8-759-240-81	IC	TC4081BP								
						R64	1-249-425-11	CARBON	4.7K	5%	1/4W
IC21	8-759-240-71	IC	TC4071BP								

BJ

BK

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R65	1-249-417-11	CARBON	1K 5% 1/4W	*****			
R66	1-249-430-11	CARBON	12K 5% 1/4W	*A-1135-464-A	BK BOARD, COMPLETE		
R67	1-249-425-11	CARBON	4.7K 5% 1/4W	*****			
R68	1-249-433-11	CARBON	22K 5% 1/4W	*2-365-226-00	HEAT SINK		
R69	1-249-425-11	CARBON	4.7K 5% 1/4W	4-370-970-01	SPACER, TR		
R70	1-249-417-11	CARBON	1K 5% 1/4W	*4-379-411-01	RETAINER (BK), TR		
R71	1-249-430-11	CARBON	12K 5% 1/4W	*4-902-345-01	HEAT SINK		
R72	1-249-433-11	CARBON	22K 5% 1/4W	<CONNECTOR>			
R74	1-249-430-11	CARBON	12K 5% 1/4W	BK1	*1-566-056-11	PIN, CONNECTOR 4P	
R75	1-249-422-11	CARBON	2.7K 5% 1/4W	BK2	*1-566-056-11	PIN, CONNECTOR 4P	
R76	1-215-463-00	METAL	56K 1% 1/4W	BK3	*1-566-056-11	PIN, CONNECTOR 4P	
R77	1-215-475-00	METAL	180K 1% 1/4W	BK4	*1-566-055-11	PIN, CONNECTOR 3P	
R78	1-215-439-00	METAL	5.6K 1% 1/4W	BK5	*1-566-057-11	PIN, CONNECTOR 5P	
R79	1-249-425-11	CARBON	4.7K 5% 1/4W	BK6	*1-566-056-11	PIN, CONNECTOR 4P	
R80	1-249-433-11	CARBON	22K 5% 1/4W	BK7	*1-566-056-11	PIN, CONNECTOR 4P	
R81	1-249-425-11	CARBON	4.7K 5% 1/4W	BK8	*1-566-056-11	PIN, CONNECTOR 4P	
R82	1-249-415-11	CARBON	680 5% 1/4W	<CAPACITOR>			
R83	1-249-417-11	CARBON	1K 5% 1/4W	C1	1-130-483-00	MYLAR	0.01MF 5% 50V
R85	1-249-430-11	CARBON	12K 5% 1/4W	C10	1-124-046-00	ELECT	10MF 20% 160V
R87	1-249-422-11	CARBON	2.7K 5% 1/4W	C11	1-130-483-00	MYLAR	0.01MF 5% 50V
R89	1-247-887-00	CARBON	220K 5% 1/4W	C51	1-101-004-00	CERAMIC	0.01MF 50V
R90	1-249-441-11	CARBON	100K 5% 1/4W	C52	1-101-004-00	CERAMIC	0.01MF 50V
R91	1-249-441-11	CARBON	100K 5% 1/4W	C53	1-101-004-00	CERAMIC	0.01MF 50V
R92	1-249-441-11	CARBON	100K 5% 1/4W	C54	1-101-004-00	CERAMIC	0.01MF 50V
R93	1-249-429-11	CARBON	10K 5% 1/4W	C55	1-101-004-00	CERAMIC	0.01MF 50V
R94	1-249-429-11	CARBON	10K 5% 1/4W	C56	1-101-004-00	CERAMIC	0.01MF 50V
R95	1-249-441-11	CARBON	100K 5% 1/4W	C64	1-124-034-51	ELECT	33MF 20% 16V
R96	1-249-417-11	CARBON	1K 5% 1/4W	C65	1-124-034-51	ELECT	33MF 20% 16V
R100	1-249-423-11	CARBON	3.3K 5% 1/4W	C66	1-124-034-51	ELECT	33MF 20% 16V
R111	1-249-427-11	CARBON	6.8K 5% 1/4W	C67	1-124-034-51	ELECT	33MF 20% 16V
R112	1-249-429-11	CARBON	10K 5% 1/4W	C68	1-124-034-51	ELECT	33MF 20% 16V
R113	1-249-429-11	CARBON	10K 5% 1/4W	C69	1-124-034-51	ELECT	33MF 20% 16V
R114	1-249-422-11	CARBON	2.7K 5% 1/4W	C70	1-124-034-51	ELECT	33MF 20% 16V
R115	1-249-419-11	CARBON	1.5K 5% 1/4W	C71	1-124-034-51	ELECT	33MF 20% 16V
R116	1-249-427-11	CARBON	6.8K 5% 1/4W	C72	1-124-034-51	ELECT	33MF 20% 16V
R117	1-249-429-11	CARBON	10K 5% 1/4W	C73	1-124-034-51	ELECT	33MF 20% 16V
R118	1-249-429-11	CARBON	10K 5% 1/4W	C74	1-124-034-51	ELECT	33MF 20% 16V
R119	1-249-422-11	CARBON	2.7K 5% 1/4W	C75	1-124-034-51	ELECT	33MF 20% 16V
R120	1-249-419-11	CARBON	1.5K 5% 1/4W	C76	1-124-034-51	ELECT	33MF 20% 16V
R121	1-249-417-11	CARBON	1K 5% 1/4W	C80	1-124-046-00	ELECT	10MF 20% 160V
R122	1-249-417-11	CARBON	1K 5% 1/4W	C81	1-124-046-00	ELECT	10MF 20% 160V
R123	1-249-413-11	CARBON	470 5% 1/4W	C82	1-124-046-00	ELECT	10MF 20% 160V
R124	1-249-417-11	CARBON	1K 5% 1/4W	C83	1-123-939-00	ELECT	10MF 20% 200V
R125	1-249-417-11	CARBON	1K 5% 1/4W	C84	1-123-939-00	ELECT	10MF 20% 200V
R126	1-249-417-11	CARBON	1K 5% 1/4W	C85	1-123-939-00	ELECT	10MF 20% 200V
R127	1-249-417-11	CARBON	1K 5% 1/4W	C86	1-123-939-00	ELECT	10MF 20% 200V
R128	1-249-417-11	CARBON	1K 5% 1/4W	C87	1-123-939-00	ELECT	10MF 20% 200V
R129	1-249-417-11	CARBON	1K 5% 1/4W	C88	1-123-939-00	ELECT	10MF 20% 200V
<VARIABLE RESISTOR>				C91	1-102-050-00	CERAMIC	0.01MF 99% 500V
RV1	1-237-504-21	RES, ADJ, CERMET	20K	C92	1-102-050-00	CERAMIC	0.01MF 99% 500V
RV3	1-237-504-21	RES, ADJ, CERMET	20K	C93	1-102-050-00	CERAMIC	0.01MF 99% 500V
RV4	1-237-503-21	RES, ADJ, CERMET	10K	C100	1-136-165-00	FILM	0.1MF 5% 50V
RV5	1-237-506-21	RES, ADJ, CERMET	100K	C102	1-124-046-00	ELECT	10MF 20% 160V
RV6	1-237-505-21	RES, ADJ, CERMET	50K	C103	1-102-976-00	CERAMIC	180PF 5% 50V
RV7	1-237-504-21	RES, ADJ, CERMET	20K	C104	1-136-110-00	FILM	0.91MF 5% 200V
RV8	1-237-504-21	RES, ADJ, CERMET	20K	C105	1-124-034-51	ELECT	33MF 20% 16V
RV9	1-237-505-21	RES, ADJ, CERMET	50K	C106	1-124-910-11	ELECT	47MF 20% 25V
<SWITCH>				C107	1-101-004-00	CERAMIC	0.01MF 50V
S1	1-570-857-11	SWITCH, SLIDE		C108	1-106-371-00	MYLAR	0.015MF 10% 200V

7. ELECTRICAL PARTS LIST

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C109	1-124-046-00	ELECT	10MF 20% 160V	D114	8-719-911-19	DIODE 1SS119	
C110	1-102-973-00	CERAMIC	100PF 5% 50V	D115	8-719-911-19	DIODE 1SS119	
C111	1-102-965-00	CERAMIC	39PF 5% 50V	D116	8-719-911-19	DIODE 1SS119	
C112	1-102-942-00	CERAMIC	5PF 1PF 50V	D201	8-719-911-19	DIODE 1SS119	
C114	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D202	8-719-911-19	DIODE 1SS119	
C115	1-101-880-00	CERAMIC	47PF 5% 50V	D203	8-719-911-19	DIODE 1SS119	
C133	1-102-942-00	CERAMIC	5PF 1PF 50V	D204	8-719-911-19	DIODE 1SS119	
C200	1-136-165-00	FILM	0.1MF 5% 50V	D205	8-719-911-19	DIODE 1SS119	
C202	1-124-046-00	ELECT	10MF 20% 160V	D206	8-719-911-19	DIODE 1SS119	
C203	1-102-976-00	CERAMIC	180PF 5% 50V	D207	8-719-911-19	DIODE 1SS119	
C204	1-136-110-00	FILM	0.91MF 5% 200V	D208	8-719-911-19	DIODE 1SS119	
C205	1-124-034-51	ELECT	33MF 20% 16V	D209	8-719-901-83	DIODE 1SS83	
C206	1-124-910-11	ELECT	47MF 20% 25V	D210	8-719-300-80	DIODE RU-1C	
C207	1-101-004-00	CERAMIC	0.01MF 50V	D211	8-719-300-80	DIODE RU-1C	
C208	1-106-371-00	MYLAR	0.015MF 10% 200V	D212	8-719-911-19	DIODE 1SS119	
C209	1-124-046-00	ELECT	10MF 20% 160V	D213	8-719-911-19	DIODE 1SS119	
C210	1-102-973-00	CERAMIC	100PF 5% 50V	D214	8-719-911-19	DIODE 1SS119	
C211	1-102-965-00	CERAMIC	39PF 5% 50V	D215	8-719-911-19	DIODE 1SS119	
C212	1-102-942-00	CERAMIC	5PF 1PF 50V	D216	8-719-911-19	DIODE 1SS119	
C214	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D301	8-719-911-19	DIODE 1SS119	
C215	1-101-880-00	CERAMIC	47PF 5% 50V	D302	8-719-911-19	DIODE 1SS119	
C233	1-102-942-00	CERAMIC	5PF 1PF 50V	D303	8-719-911-19	DIODE 1SS119	
C300	1-136-165-00	FILM	0.1MF 5% 50V	D304	8-719-911-19	DIODE 1SS119	
C302	1-124-046-00	ELECT	10MF 20% 160V	D305	8-719-911-19	DIODE 1SS119	
C303	1-102-976-00	CERAMIC	180PF 5% 50V	D306	8-719-911-19	DIODE 1SS119	
C304	1-136-110-00	FILM	0.91MF 5% 200V	D307	8-719-911-19	DIODE 1SS119	
C305	1-124-034-51	ELECT	33MF 20% 16V	D308	8-719-911-19	DIODE 1SS119	
C306	1-124-910-11	ELECT	47MF 20% 25V	D309	8-719-901-83	DIODE 1SS83	
C307	1-101-004-00	CERAMIC	0.01MF 50V	D310	8-719-300-80	DIODE RU-1C	
C308	1-106-371-00	MYLAR	0.015MF 10% 200V	D311	8-719-300-80	DIODE RU-1C	
C309	1-124-046-00	ELECT	10MF 20% 160V	D312	8-719-911-19	DIODE 1SS119	
C310	1-102-973-00	CERAMIC	100PF 5% 50V	D313	8-719-911-19	DIODE 1SS119	
C311	1-102-965-00	CERAMIC	39PF 5% 50V	D314	8-719-911-19	DIODE 1SS119	
C312	1-102-942-00	CERAMIC	5PF 1PF 50V	D315	8-719-911-19	DIODE 1SS119	
C314	1-102-936-00	CERAMIC	3PF 0.25PF 50V	D316	8-719-911-19	DIODE 1SS119	
C315	1-101-880-00	CERAMIC	47PF 5% 50V				
C333	1-102-942-00	CERAMIC	5PF 1PF 50V				
<TRIMMER>				<IC>			
CV101	1-141-179-12	CAP, VAR, TRIMMER		IC1	8-759-145-58	IC UPC4558C	
CV102	1-141-171-00	CAP, TRIMMER 15P		<TRANSISTOR>			
CV201	1-141-179-12	CAP, VAR, TRIMMER		Q1	8-729-384-48	TRANSISTOR 2SA844-E	
CV202	1-141-171-00	CAP, TRIMMER 15P		Q12	8-729-200-17	TRANSISTOR 2SA1091-0	
CV301	1-141-179-12	CAP, VAR, TRIMMER		Q13	8-729-200-17	TRANSISTOR 2SA1091-0	
CV302	1-141-171-00	CAP, TRIMMER 15P		Q101	8-729-266-82	TRANSISTOR 2SC2668-0	
				Q102	8-729-384-48	TRANSISTOR 2SA844-E	
<DIODE>				Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D1	8-719-911-19	DIODE 1SS119		Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D2	8-719-911-19	DIODE 1SS119		Q105	8-729-384-48	TRANSISTOR 2SA844-E	
D101	8-719-911-19	DIODE 1SS119		Q106	8-729-804-63	TRANSISTOR 2SA1406-E	
D102	8-719-911-19	DIODE 1SS119		Q107	8-729-804-58	TRANSISTOR 2SC3600-E	
D103	8-719-911-19	DIODE 1SS119		Q108	8-729-804-58	TRANSISTOR 2SC3600-E	
D104	8-719-911-19	DIODE 1SS119		Q109	8-729-804-63	TRANSISTOR 2SA1406-E	
D105	8-719-911-19	DIODE 1SS119		Q110	8-729-804-58	TRANSISTOR 2SC3600-E	
D106	8-719-911-19	DIODE 1SS119		Q111	8-729-804-63	TRANSISTOR 2SA1406-E	
D107	8-719-911-19	DIODE 1SS119		Q112	8-729-255-12	TRANSISTOR 2SC2551-0	
D108	8-719-911-19	DIODE 1SS119		Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D109	8-719-901-83	DIODE 1SS83		Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D110	8-719-300-80	DIODE RU-1C		Q115	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D111	8-719-300-80	DIODE RU-1C		Q201	8-729-266-82	TRANSISTOR 2SC2668-0	
D112	8-719-911-19	DIODE 1SS119		Q202	8-729-384-48	TRANSISTOR 2SA844-E	
D113	8-719-911-19	DIODE 1SS119		Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE	

BK

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE		R126	1-215-394-00	METAL 75 1% 1/4W	
Q205	8-729-384-48	TRANSISTOR 2SA844-E		R127	1-215-394-00	METAL 75 1% 1/4W	
Q206	8-729-804-63	TRANSISTOR 2SA1406-E		R128	1-214-779-00	METAL 120K 1% 1/4W	
Q207	8-729-804-58	TRANSISTOR 2SC3600-E		R129	1-249-430-11	CARBON 12K 5% 1/4W	
Q208	8-729-804-58	TRANSISTOR 2SC3600-E		R130	1-216-443-11	METAL OXIDE 56K 5% 1W	F
Q209	8-729-804-63	TRANSISTOR 2SA1406-E		R131	1-249-433-11	CARBON 22K 5% 1/4W	
Q210	8-729-804-58	TRANSISTOR 2SC3600-E		R132	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q211	8-729-804-63	TRANSISTOR 2SA1406-E		R133	1-249-435-11	CARBON 33K 5% 1/4W	
Q212	8-729-255-12	TRANSISTOR 2SC2551-O		R134	1-249-433-11	CARBON 22K 5% 1/4W	
Q213	8-729-119-78	TRANSISTOR 2SC2785-HFE		R135	1-249-426-11	CARBON 5.6K 5% 1/4W	
Q214	8-729-119-78	TRANSISTOR 2SC2785-HFE		R136	1-249-423-11	CARBON 3.3K 5% 1/4W	
Q215	8-729-119-78	TRANSISTOR 2SC2785-HFE		R137	1-247-903-00	CARBON 1M 5% 1/4W	
Q301	8-729-266-82	TRANSISTOR 2SC2668-O		R138	1-249-426-11	CARBON 5.6K 5% 1/4W	
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R139	1-215-441-00	METAL 6.8K 1% 1/4W	
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE		R140	1-249-405-11	CARBON 100 5% 1/4W	
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE		R141	1-249-413-11	CARBON 470 5% 1/4W	
Q305	8-729-384-48	TRANSISTOR 2SA844-E		R142	1-249-390-11	CARBON 5.6 5% 1/4W	
Q306	8-729-804-63	TRANSISTOR 2SA1406-E		R143	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q307	8-729-804-58	TRANSISTOR 2SC3600-E		R201	1-215-391-00	METAL 56 1% 1/4W	
Q308	8-729-804-58	TRANSISTOR 2SC3600-E		R202	1-249-419-11	CARBON 1.5K 5% 1/4W	
Q309	8-729-804-63	TRANSISTOR 2SA1406-E		R204	1-249-405-11	CARBON 100 5% 1/4W	
Q310	8-729-804-58	TRANSISTOR 2SC3600-E		R205	1-249-424-11	CARBON 3.9K 5% 1/4W	
Q311	8-729-804-63	TRANSISTOR 2SA1406-E		R206	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q312	8-729-255-12	TRANSISTOR 2SC2551-O		R207	1-249-405-11	CARBON 100 5% 1/4W	
Q313	8-729-119-78	TRANSISTOR 2SC2785-HFE		R208	1-249-405-11	CARBON 100 5% 1/4W	
Q314	8-729-119-78	TRANSISTOR 2SC2785-HFE		R209	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q315	8-729-119-78	TRANSISTOR 2SC2785-HFE		R210	1-249-405-11	CARBON 100 5% 1/4W	
<RESISTOR>				R211	1-249-405-11	CARBON 100 5% 1/4W	
R1	1-249-429-11	CARBON 10K 5% 1/4W		R212	1-215-391-00	METAL 56 1% 1/4W	
R2	1-249-441-11	CARBON 100K 5% 1/4W		R213	1-215-391-00	METAL 56 1% 1/4W	
R3	1-249-417-11	CARBON 1K 5% 1/4W		R214	1-215-437-00	METAL 4.7K 1% 1/4W	
R10	1-215-878-00	METAL OXIDE 33K 5% 1W	F	R215	1-214-765-00	METAL 33K 1% 1/4W	
R11	1-249-439-11	CARBON 68K 5% 1/4W		R216	1-214-765-00	METAL 33K 1% 1/4W	
R12	1-249-417-11	CARBON 1K 5% 1/4W		R217	1-249-405-11	CARBON 100 5% 1/4W	
R13	1-249-429-11	CARBON 10K 5% 1/4W		R218	1-214-781-00	METAL 150K 1% 1/4W	
R14	1-215-469-00	METAL 100K 1% 1/4W		R219	1-215-447-00	METAL 12K 1% 1/4W	
R15	1-215-461-00	METAL 47K 1% 1/4W		R220	1-216-430-11	METAL OXIDE 390 5% 1W	F
R16	1-215-447-00	METAL 12K 1% 1/4W		R221	1-249-405-11	CARBON 100 5% 1/4W	
R101	1-215-391-00	METAL 56 1% 1/4W		R222	1-249-405-11	CARBON 100 5% 1/4W	
R102	1-249-419-11	CARBON 1.5K 5% 1/4W		R223	1-215-405-00	METAL 220 1% 1/4W	
R104	1-249-405-11	CARBON 100 5% 1/4W		R224	1-249-405-11	CARBON 100 5% 1/4W	
R105	1-249-424-11	CARBON 3.9K 5% 1/4W		R225	1-249-405-11	CARBON 100 5% 1/4W	
R106	1-249-422-11	CARBON 2.7K 5% 1/4W		R226	1-215-394-00	METAL 75 1% 1/4W	
R107	1-249-405-11	CARBON 100 5% 1/4W		R227	1-215-394-00	METAL 75 1% 1/4W	
R108	1-249-405-11	CARBON 100 5% 1/4W		R228	1-214-779-00	METAL 120K 1% 1/4W	
R109	1-249-421-11	CARBON 2.2K 5% 1/4W		R229	1-249-430-11	CARBON 12K 5% 1/4W	
R110	1-249-405-11	CARBON 100 5% 1/4W		R230	1-216-443-11	METAL OXIDE 56K 5% 1W	F
R111	1-249-405-11	CARBON 100 5% 1/4W		R231	1-249-433-11	CARBON 22K 5% 1/4W	
R112	1-215-391-00	METAL 56 1% 1/4W		R232	1-249-422-11	CARBON 2.7K 5% 1/4W	
R113	1-215-391-00	METAL 56 1% 1/4W		R233	1-249-435-11	CARBON 33K 5% 1/4W	
R114	1-215-437-00	METAL 4.7K 1% 1/4W		R234	1-249-433-11	CARBON 22K 5% 1/4W	
R115	1-214-765-00	METAL 33K 1% 1/4W		R235	1-249-426-11	CARBON 5.6K 5% 1/4W	
R116	1-214-765-00	METAL 33K 1% 1/4W		R236	1-249-423-11	CARBON 3.3K 5% 1/4W	
R117	1-249-405-11	CARBON 100 5% 1/4W		R237	1-247-903-00	CARBON 1M 5% 1/4W	
R118	1-214-781-00	METAL 150K 1% 1/4W		R238	1-249-426-11	CARBON 5.6K 5% 1/4W	
R119	1-215-447-00	METAL 12K 1% 1/4W		R239	1-215-441-00	METAL 6.8K 1% 1/4W	
R120	1-216-430-11	METAL OXIDE 390 5% 1W	F	R240	1-249-405-11	CARBON 100 5% 1/4W	
R121	1-249-405-11	CARBON 100 5% 1/4W		R241	1-249-413-11	CARBON 470 5% 1/4W	
R122	1-249-405-11	CARBON 100 5% 1/4W		R242	1-249-390-11	CARBON 5.6 5% 1/4W	
R123	1-215-405-00	METAL 220 1% 1/4W		R243	1-249-422-11	CARBON 2.7K 5% 1/4W	
R124	1-249-405-11	CARBON 100 5% 1/4W		R301	1-215-391-00	METAL 56 1% 1/4W	
R125	1-249-405-11	CARBON 100 5% 1/4W		R302	1-249-419-11	CARBON 1.5K 5% 1/4W	
				R304	1-249-405-11	CARBON 100 5% 1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R305	1-249-424-11	CARBON	3.9K 5% 1/4W	C23	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
R306	1-249-422-11	CARBON	2.7K 5% 1/4W	C30	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
R307	1-249-405-11	CARBON	100 5% 1/4W	C32	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
R308	1-249-405-11	CARBON	100 5% 1/4W	C34	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
R309	1-249-421-11	CARBON	2.2K 5% 1/4W				
R310	1-249-405-11	CARBON	100 5% 1/4W	C37	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
R311	1-249-405-11	CARBON	100 5% 1/4W	C38	1-163-222-11	CERAMIC CHIP 5PF	0.25PF 50V
R312	1-215-391-00	METAL	56 1% 1/4W	C40	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R313	1-215-391-00	METAL	56 1% 1/4W	C42	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R314	1-215-437-00	METAL	4.7K 1% 1/4W	C43	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R315	1-214-765-00	METAL	33K 1% 1/4W	C44	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
R316	1-214-765-00	METAL	33K 1% 1/4W	C45	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R317	1-249-405-11	CARBON	100 5% 1/4W	C47	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R318	1-214-781-00	METAL	150K 1% 1/4W	C48	1-124-907-11	ELECT 10MF	20% 50V
R319	1-215-447-00	METAL	12K 1% 1/4W	C49	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
R320	1-216-430-11	METAL OXIDE	390 5% 1W F	C50	1-124-907-11	ELECT 10MF	20% 50V
R321	1-249-405-11	CARBON	100 5% 1/4W	C51	1-123-875-11	ELECT 10MF	20% 50V
R322	1-249-405-11	CARBON	100 5% 1/4W	C52	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R323	1-215-405-00	METAL	220 1% 1/4W	C53	1-123-875-11	ELECT 10MF	20% 50V
R324	1-249-405-11	CARBON	100 5% 1/4W	C54	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R325	1-249-405-11	CARBON	100 5% 1/4W	C55	1-123-875-11	ELECT 10MF	20% 50V
R326	1-215-394-00	METAL	75 1% 1/4W	C56	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R327	1-215-394-00	METAL	75 1% 1/4W	C60	1-124-478-11	ELECT 100MF	20% 25V
R328	1-214-779-00	METAL	120K 1% 1/4W	C61	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R329	1-249-430-11	CARBON	12K 5% 1/4W	C62	1-124-907-11	ELECT 10MF	20% 50V
R330	1-216-443-11	METAL OXIDE	56K 5% 1W F	C63	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R331	1-249-433-11	CARBON	22K 5% 1/4W	C64	1-124-477-11	ELECT 47MF	20% 16V
R332	1-249-422-11	CARBON	2.7K 5% 1/4W	C65	1-124-907-11	ELECT 10MF	20% 50V
R333	1-249-435-11	CARBON	33K 5% 1/4W	C66	1-124-907-11	ELECT 10MF	20% 50V
R334	1-249-433-11	CARBON	22K 5% 1/4W	C67	1-124-907-11	ELECT 10MF	20% 50V
R335	1-249-426-11	CARBON	5.6K 5% 1/4W	C68	1-124-907-11	ELECT 10MF	20% 50V
R336	1-249-423-11	CARBON	3.3K 5% 1/4W	C69	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R337	1-247-903-00	CARBON	1M 5% 1/4W	C70	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R338	1-249-426-11	CARBON	5.6K 5% 1/4W	C71	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R339	1-215-441-00	METAL	6.8K 1% 1/4W	C72	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R340	1-249-405-11	CARBON	100 5% 1/4W	C73	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R341	1-249-413-11	CARBON	470 5% 1/4W	C74	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R342	1-249-390-11	CARBON	5.6 5% 1/4W	C75	1-163-038-00	CERAMIC CHIP 0.1MF	25V
R343	1-249-422-11	CARBON	2.7K 5% 1/4W	C76	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C77	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*****				C78	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*A-1135-606-B BT BOARD, COMPLETE (BVM-1911 ONLY)				C79	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*****				C80	1-163-038-00	CERAMIC CHIP 0.1MF	25V
*4-353-708-00 HOOK, FINGER				C81	1-123-875-11	ELECT 10MF	20% 50V
<CAPACITOR>				C82	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C1	1-124-477-11	ELECT	47MF 20% 16V	C83	1-123-875-11	ELECT 10MF	20% 50V
C3	1-124-477-11	ELECT	47MF 20% 16V	C84	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C4	1-124-477-11	ELECT	47MF 20% 16V	C85	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C5	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C86	1-123-875-11	ELECT 10MF	20% 50V
C6	1-124-477-11	ELECT	47MF 20% 16V	C87	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C9	1-163-369-11	CERAMIC CHIP	47PF 5% 50V	C88	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C10	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C89	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C14	1-163-101-00	CERAMIC CHIP	22PF 5% 50V	C90	1-124-907-11	ELECT 10MF	20% 50V
C15	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C100	1-124-478-11	ELECT 100MF	20% 25V
C16	1-163-227-11	CERAMIC CHIP	10PF 0.5PF 50V	C101	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C17	1-163-093-00	CERAMIC CHIP	10PF 5% 50V	C102	1-124-907-11	ELECT 10MF	20% 50V
C18	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C103	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C19	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C104	1-124-477-11	ELECT 47MF	20% 16V
C20	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C105	1-124-907-11	ELECT 10MF	20% 50V
C21	1-163-038-00	CERAMIC CHIP	0.1MF 25V	C106	1-124-907-11	ELECT 10MF	20% 50V
C22	1-163-099-00	CERAMIC CHIP	18PF 5% 50V	C107	1-124-907-11	ELECT 10MF	20% 50V
				C108	1-124-907-11	ELECT 10MF	20% 50V
				C109	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C110	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C111	1-163-038-00	CERAMIC CHIP 0.1MF	25V

## 7. ELECTRICAL PARTS LIST

7-22



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
L9	1-410-204-31	INDUCTOR CHIP 10UH		Q82	8-729-901-01	TRANSISTOR DTC144EK	
L10	1-408-419-00	INDUCTOR 68UH		Q83	8-729-901-06	TRANSISTOR DTA144EK	
L11	1-410-200-31	INDUCTOR CHIP 4.7UH		Q84	8-729-901-06	TRANSISTOR DTA144EK	
L12	1-410-200-31	INDUCTOR CHIP 4.7UH		Q85	8-729-140-97	TRANSISTOR 2SB734-34	
L13	1-410-196-11	INDUCTOR CHIP 2.2UH		Q86	8-729-140-96	TRANSISTOR 2SD774-34	
L14	1-410-204-31	INDUCTOR CHIP 10UH		<RESISTOR>			
L15	1-410-216-31	INDUCTOR CHIP 100UH		JW1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
<TRANSISTOR>				JW2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q1	8-729-216-22	TRANSISTOR 2SA1162-G		JW3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q3	8-729-122-63	TRANSISTOR 2SA1226-B4		JW11	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q4	8-729-175-72	TRANSISTOR 2SC2757-T33		JW12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q5	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW13	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q6	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW14	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q7	8-729-122-63	TRANSISTOR 2SA1226-B4		JW15	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q8	8-729-216-22	TRANSISTOR 2SA1162-G		R1	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q9	8-729-122-63	TRANSISTOR 2SA1226-B4		R2	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q10	8-729-175-72	TRANSISTOR 2SC2757-T33		R3	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q11	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R4	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q12	8-729-122-63	TRANSISTOR 2SA1226-B4		R5	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q13	8-729-175-72	TRANSISTOR 2SC2757-T33		R6	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q14	8-729-175-72	TRANSISTOR 2SC2757-T33		R7	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q15	8-729-216-22	TRANSISTOR 2SA1162-G		R8	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
Q16	8-729-107-46	TRANSISTOR 2SC3624A-L15		R9	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W	
Q17	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R10	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
Q18	8-729-216-22	TRANSISTOR 2SA1162-G		R11	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W	
Q19	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R12	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
Q20	8-729-175-72	TRANSISTOR 2SC2757-T33		R13	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q21	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R14	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W	
Q22	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R15	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q23	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R16	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q24	8-729-216-22	TRANSISTOR 2SA1162-G		R17	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q25	8-729-107-46	TRANSISTOR 2SC3624A-L15		R18	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q32	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R19	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q33	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R20	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q34	8-729-216-22	TRANSISTOR 2SA1162-G		R21	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q35	8-729-216-22	TRANSISTOR 2SA1162-G		R22	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q36	8-729-122-63	TRANSISTOR 2SA1226-B4		R23	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q37	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R24	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q38	8-729-122-63	TRANSISTOR 2SA1226-B4		R25	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q39	8-729-175-72	TRANSISTOR 2SC2757-T33		R26	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q40	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R27	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q41	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R28	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q42	8-729-216-22	TRANSISTOR 2SA1162-G		R29	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q43	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R30	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q44	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R31	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q45	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R33	1-216-665-11	METAL CHIP 3.9K 0.50% 1/10W	
Q52	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R34	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q54	8-729-216-22	TRANSISTOR 2SA1162-G		R35	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q56	8-729-122-63	TRANSISTOR 2SA1226-B4		R36	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q57	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R37	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q58	8-729-122-63	TRANSISTOR 2SA1226-B4		R38	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q59	8-729-175-72	TRANSISTOR 2SC2757-T33		R39	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q60	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R40	1-216-630-11	METAL CHIP 130 0.50% 1/10W	
Q61	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R41	1-216-630-11	METAL CHIP 130 0.50% 1/10W	
Q62	8-729-216-22	TRANSISTOR 2SA1162-G		R42	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q65	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R43	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
Q71	8-729-175-72	TRANSISTOR 2SC2757-T33		R44	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q72	8-729-122-63	TRANSISTOR 2SA1226-B4		R45	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q73	8-729-175-72	TRANSISTOR 2SC2757-T33		R46	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q74	8-729-122-63	TRANSISTOR 2SA1226-B4		R47	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q81	8-729-901-06	TRANSISTOR DTA144EK					



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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R48	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R125	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W
R49	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R126	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R50	1-216-025-00	METAL GLAZE	100 5% 1/10W	R127	1-216-025-00	METAL GLAZE	100 5% 1/10W
R51	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R128	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R52	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R129	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R53	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R130	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W
R54	1-216-025-00	METAL GLAZE	100 5% 1/10W	R131	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R55	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R132	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R56	1-216-025-00	METAL GLAZE	100 5% 1/10W	R133	1-216-025-00	METAL GLAZE	100 5% 1/10W
R57	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R134	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R58	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R135	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R59	1-216-025-00	METAL GLAZE	100 5% 1/10W	R136	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R60	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R137	1-216-025-00	METAL GLAZE	100 5% 1/10W
R61	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R138	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R62	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R139	1-216-025-00	METAL GLAZE	100 5% 1/10W
R63	1-216-025-00	METAL GLAZE	100 5% 1/10W	R140	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R64	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R141	1-216-025-00	METAL GLAZE	100 5% 1/10W
R65	1-216-025-00	METAL GLAZE	100 5% 1/10W	R142	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R143	1-216-025-00	METAL GLAZE	100 5% 1/10W
R67	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R150	1-216-025-00	METAL GLAZE	100 5% 1/10W
R68	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R153	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R69	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R154	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R70	1-216-025-00	METAL GLAZE	100 5% 1/10W	R157	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R71	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R158	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R72	1-216-025-00	METAL GLAZE	100 5% 1/10W	R161	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R73	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R163	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R74	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R164	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R75	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R165	1-216-025-00	METAL GLAZE	100 5% 1/10W
R76	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R166	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R77	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R167	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R78	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R169	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R79	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R170	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R80	1-216-025-00	METAL GLAZE	100 5% 1/10W	R171	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W
R81	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R172	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W
R82	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R173	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R83	1-216-025-00	METAL GLAZE	100 5% 1/10W	R174	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R84	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R175	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R85	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R176	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R86	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R177	1-216-025-00	METAL GLAZE	100 5% 1/10W
R87	1-216-025-00	METAL GLAZE	100 5% 1/10W	R178	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R88	1-216-025-00	METAL GLAZE	100 5% 1/10W	R179	1-216-025-00	METAL GLAZE	100 5% 1/10W
R89	1-216-025-00	METAL GLAZE	100 5% 1/10W	R181	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R103	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R182	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R104	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R183	1-216-025-00	METAL GLAZE	100 5% 1/10W
R105	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R184	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R106	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R185	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R107	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R186	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R108	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R191	1-216-025-00	METAL GLAZE	100 5% 1/10W
R109	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R192	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R110	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R193	1-216-025-00	METAL GLAZE	100 5% 1/10W
R111	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R201	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R112	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R202	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R113	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R203	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R114	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R204	1-216-033-00	METAL GLAZE	220 5% 1/10W
R115	1-216-025-00	METAL GLAZE	100 5% 1/10W	R205	1-216-033-00	METAL GLAZE	220 5% 1/10W
R116	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R206	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R117	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R207	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R118	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W	R208	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R119	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R209	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R120	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R210	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R121	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W	R211	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R122	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R212	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R123	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R213	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R124	1-216-049-00	METAL GLAZE	1K 5% 1/10W				

7. ELECTRICAL PARTS LIST





GC GA

Les composants identifiés par  
une trame et une marque  $\Delta$   
sont critiques pour la sécurité.  
Ne les remplacer que par une  
pièce portant le numéro spécifié.

The components identified by  
shading and mark  $\Delta$  are critical  
for safety.  
Replace only with part number  
specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C4	1-126-233-11	ELECT 22MF	20% 25V	C15	1-124-360-00	ELECT 1000MF	20% 16V
C5	1-126-233-11	ELECT 22MF	20% 25V	C16	1-126-103-11	ELECT 470MF	20% 16V
C6	1-126-233-11	ELECT 22MF	20% 25V	C17	1-106-375-12	MYLAR 0.022MF	10% 100V
C7	1-126-233-11	ELECT 22MF	20% 25V	C18	1-108-638-11	MYLAR 0.1MF	10% 100V
C8	1-126-233-11	ELECT 22MF	20% 25V	C19	1-102-030-00	CERAMIC 330PF	10% 500V
C9	1-126-233-11	ELECT 22MF	20% 25V	C20	1-162-117-00	CERAMIC 100PF	10% 500V
C12	1-101-004-00	CERAMIC 0.01MF	50V	C21	1-102-038-00	CERAMIC 0.001MF	500V
C14	1-101-004-00	CERAMIC 0.01MF	50V	C22	1-162-117-00	CERAMIC 100PF	10% 500V
C16	1-101-004-00	CERAMIC 0.01MF	50V	C23	1-106-375-12	MYLAR 0.022MF	10% 100V
C17	1-101-004-00	CERAMIC 0.01MF	50V	C24	1-108-638-11	MYLAR 0.1MF	10% 100V
C18	1-101-004-00	CERAMIC 0.01MF	50V	C25	1-124-791-11	ELECT 1MF	20% 50V
<CONNECTOR>				C26	1-101-361-00	CERAMIC 150PF	5% 50V
GC1	*1-566-044-11	PIN, CONNECTOR 5P		C27	1-101-361-00	CERAMIC 150PF	5% 50V
GC2	*1-566-057-11	PIN, CONNECTOR 5P		C28	1-124-915-11	ELECT 10MF	20% 16V
GC3	*1-566-044-11	PIN, CONNECTOR 5P		C29	1-124-910-11	ELECT 47MF	20% 25V
<IC>				C30	1-162-117-00	CERAMIC 100PF	10% 500V
IC1	8-759-929-65	IC LM7912CT		C31	1-102-030-00	CERAMIC 330PF	10% 500V
IC2	8-759-929-65	IC LM7912CT		C32	1-124-791-11	ELECT 1MF	20% 50V
IC3	8-759-701-79	IC NJM7812FA		C33	1-101-361-00	CERAMIC 150PF	5% 50V
IC4	8-759-701-79	IC NJM7812FA		C34	1-101-361-00	CERAMIC 150PF	5% 50V
*****				C35	1-124-791-11	ELECT 1MF	20% 50V
*A-1316-089-A	GA BOARD, COMPLETE (BVM-1911 ONLY)			C36	1-124-910-11	ELECT 47MF	20% 25V
	*****			C37	1-130-734-00	FILM 0.0068MF	5% 50V
	(INCLUDING GB BOARD)			C38	1-136-165-00	FILM 0.1MF	5% 50V
Δ 1-533-167-21	HOLDER, FUSE			C44	1-124-915-11	ELECT 10MF	20% 16V
Δ 1-533-168-21	HOLDER, FUSE			C45	1-162-132-00	CERAMIC 270PF	10% 2KV
1-535-316-11	TERMINAL, GROUND (M4)			C46	1-124-915-11	ELECT 10MF	20% 16V
Δ 1-570-173-22	SWITCH, VOLTAGE CHANGE			C47	1-136-173-00	FILM 0.47MF	5% 50V
Δ 1-580-375-11	INLET 3P			C48	1-136-173-00	FILM 0.47MF	5% 50V
2-990-241-02	HOLDER (A), PLUG			C49	1-124-915-11	ELECT 10MF	20% 16V
*3-337-402-01	BAND, BINDING			C50	1-101-006-00	CERAMIC 0.047MF	50V
*4-347-706-00	HEAT SINK (TR)			C51	1-101-006-00	CERAMIC 0.047MF	50V
*4-371-879-02	COVER, AC SELECT			C52	1-101-006-00	CERAMIC 0.047MF	50V
4-379-403-01	SPACER (G1), POLISHING			C53	1-101-006-00	CERAMIC 0.047MF	50V
*4-379-408-01	INSULATOR (G3)			C54	1-101-006-00	CERAMIC 0.047MF	50V
*4-379-409-01	NUT, PLATE			C55	1-124-915-11	ELECT 10MF	20% 16V
4-379-410-01	SPACER (G2), POLISHING			C56	1-136-201-11	FILM 0.22MF	5% 400V
*4-379-430-01	PANEL, POWER			C57	1-124-915-11	ELECT 10MF	20% 25V
*4-386-847-01	HEAT SINK (S.R.T)			C58	1-123-379-00	ELECT 0.47MF	20% 50V
*4-386-848-01	BAND (S.R.T)			C59	1-130-734-00	FILM 0.0068MF	5% 50V
*4-393-031-01	COVER, FUSE HOLDER			C60	1-102-228-00	CERAMIC 470PF	10% 500V
*4-601-466-11	COVER, 3P INLET			C61	1-102-228-00	CERAMIC 470PF	10% 500V
<CAPACITOR>				C62	1-102-228-00	CERAMIC 470PF	10% 500V
C1	1-124-024-00	ELECT 4.7MF	20% 350V	C63	1-102-228-00	CERAMIC 470PF	10% 500V
C2	1-124-024-00	ELECT 4.7MF	20% 350V	C64	1-124-024-00	ELECT 4.7MF	20% 350V
C3	1-162-117-00	CERAMIC 100PF	10% 500V	C65	1-124-024-00	ELECT 4.7MF	20% 350V
C4	1-162-117-00	CERAMIC 100PF	10% 500V	C66	1-162-117-00	CERAMIC 100PF	10% 500V
C5	1-162-117-00	CERAMIC 100PF	10% 500V	C67	1-162-117-00	CERAMIC 100PF	10% 500V
C6	1-162-117-00	CERAMIC 100PF	10% 500V	C68	1-162-117-00	CERAMIC 100PF	10% 500V
C7	1-126-104-11	ELECT 470MF	20% 25V	C69	1-124-562-11	ELECT 47MF	20% 200V
C8	1-126-105-11	ELECT 1000MF	20% 25V	C70	1-124-171-00	ELECT 100MF	20% 160V
C9	1-126-104-11	ELECT 470MF	20% 25V	C71	1-162-117-00	CERAMIC 100PF	10% 500V
C10	1-126-105-11	ELECT 1000MF	20% 25V	C72	1-124-562-11	ELECT 47MF	20% 200V
C11	1-126-104-11	ELECT 470MF	20% 25V	C73	1-124-171-00	ELECT 100MF	20% 160V
C12	1-124-602-00	ELECT 2200MF	20% 25V	C74	1-124-122-11	ELECT 100MF	20% 16V
C13	1-126-104-11	ELECT 470MF	20% 25V	C75	1-124-122-11	ELECT 100MF	20% 16V
C14	1-124-602-00	ELECT 2200MF	20% 25V	C76 Δ	1-161-953-52	CERAMIC 0.0047MF	20% 400V
				C77 Δ	1-161-953-52	CERAMIC 0.0047MF	20% 400V

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

GA

REF.NO.	PART NO.	DESCRIPTION	REMARK
C78	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C79	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C80	1-125-658-11	ELECT	560MF 20% 250V
C81	1-125-658-11	ELECT	560MF 20% 250V
C82	1-123-369-00	ELECT	4.7MF 20% 25V
C83	1-101-004-00	CERAMIC	0.01MF 50V
C84	$\Delta$ 1-136-311-51	FILM	0.47MF 20% 125V
C85	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C86	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C87	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C88	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C89	$\Delta$ 1-136-311-51	FILM	0.47MF 20% 125V
C90	1-136-171-00	FILM	0.033MF 5% 50V
C92	1-136-171-00	FILM	0.033MF 5% 50V
C94	1-102-038-00	CERAMIC	0.001MF 500V
C95	1-136-173-00	FILM	0.47MF 5% 50V
C96	1-102-050-00	CERAMIC	0.01MF 99% 500V
C97	1-136-173-00	FILM	0.47MF 5% 50V
C98	1-136-173-00	FILM	0.47MF 5% 50V
C99	1-102-050-00	CERAMIC	0.01MF 99% 500V
C100	1-162-117-00	CERAMIC	100PF 10% 500V
C101	1-162-117-00	CERAMIC	100PF 10% 500V
C102	1-136-601-11	FILM	0.01MF 5% 630V
C103	1-136-601-11	FILM	0.01MF 5% 630V
<DIODE>			
D1	8-719-912-51	DIODE ESAC25-04C	
D2	8-719-918-73	DIODE ESAC25-04N	
D3	8-719-901-73	DIODE ESAD25-04D	
D4	8-719-901-73	DIODE ESAD25-04D	
D5	8-719-907-24	DIODE ESAC31-02D	
D6	8-719-907-24	DIODE ESAC31-02D	
D7	8-719-300-33	DIODE RU-3AM	
D8	8-719-300-52	DIODE CTU-38R	
D9	8-719-300-53	DIODE CTU-38S	
D10	8-719-912-51	DIODE ESAC25-04C	
D11	8-719-918-73	DIODE ESAC25-04N	
D12	8-719-911-19	DIODE ISS119	
D13	8-719-911-19	DIODE ISS119	
D14	8-719-100-58	DIODE RD10EB3	
D15	8-719-911-19	DIODE ISS119	
D16	8-719-911-19	DIODE ISS119	
D17	8-719-911-19	DIODE ISS119	
D18	8-719-109-89	DIODE RD5.6ESB2	
D20	8-719-200-02	DIODE 10E-2	
D21	$\Delta$ 8-719-300-07	DIODE RB406N	
D22	8-759-157-40	IC UPC574J	
D23	8-719-911-19	DIODE ISS119	
D24	8-719-100-58	DIODE RD10EB3	
D25	8-719-911-19	DIODE ISS119	
D26	8-719-003-08	THYRISTOR CR3CM-8	
D27	8-719-982-04	DIODE ERB81-004	
D28	8-719-982-04	DIODE ERB81-004	
D29	8-719-982-04	DIODE ERB81-004	
D30	8-719-982-04	DIODE ERB81-004	
D31	8-719-300-33	DIODE RU-3AM	
D32	8-719-300-33	DIODE RU-3AM	
<CONNECTOR>			
GA1	1-506-348-XX	PIN, CONNECTOR 3P	
GA2	*1-506-371-00	PIN, CONNECTOR 2P	
GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P	

REF.NO.	PART NO.	DESCRIPTION	REMARK
GA4	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
GA5	*1-566-055-11	PIN, CONNECTOR 3P	
GA6	*1-566-055-11	PIN, CONNECTOR 3P	
GA7	*1-566-058-11	PIN, CONNECTOR 6P	
GA8	*1-566-057-11	PIN, CONNECTOR 5P	
<IC>			
IC1	1-806-805-11	IC MC5433	
IC2	8-759-904-94	IC TL494CN	
IC3	8-759-904-94	IC TL494CN	
<COIL>			
L3	1-459-643-11	COIL, CHOKE 525UH	
L4	1-459-643-11	COIL, CHOKE 525UH	
L5	1-459-643-11	COIL, CHOKE 525UH	
L6	1-459-643-11	COIL, CHOKE 525UH	
L7	1-459-207-00	COIL, CORE	
L8	1-459-644-11	COIL, CHOKE 2.9MMH	
L9	1-459-645-11	COIL, CHOKE 20MMH	
L10	1-421-329-00	COIL, CHOKE	
L11	1-421-329-00	COIL, CHOKE	
L12	1-421-329-00	COIL, CHOKE	
L13	1-421-329-00	COIL, CHOKE	
L14	1-421-329-00	COIL, CHOKE	
L15	1-421-329-00	COIL, CHOKE	
L16	1-421-329-00	COIL, CHOKE	
L17	$\Delta$ 1-421-590-11	TRANSFORMER, LINE FILTER	
L18	$\Delta$ 1-421-590-11	TRANSFORMER, LINE FILTER	
<TRANSISTOR>			
Q1	8-729-301-76	TRANSISTOR STR8124-R	
Q2	8-729-301-76	TRANSISTOR STR8124-R	
Q3	8-729-140-96	TRANSISTOR 2SD774-34	
Q4	8-729-140-96	TRANSISTOR 2SD774-34	
Q5	8-729-140-96	TRANSISTOR 2SD774-34	
Q6	8-729-140-96	TRANSISTOR 2SD774-34	
Q7	8-729-140-97	TRANSISTOR 2SB734-34	
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q10	8-729-313-42	TRANSISTOR 2SD1134-C	
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q12	8-729-140-96	TRANSISTOR 2SD774-34	
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<RESISTOR>			
R1	1-215-857-11	METAL OXIDE 10 5% 1W	F
R2	1-215-857-11	METAL OXIDE 10 5% 1W	F
R3	1-247-715-11	CARBON 1.5K 5% 1/4W	
R4	1-215-857-11	METAL OXIDE 10 5% 1W	F
R5	1-215-857-11	METAL OXIDE 10 5% 1W	F
R6	1-249-447-11	CARBON 1 5% 1/4W	F
R7	1-247-692-11	CARBON 22 5% 1/4W	
R8	1-249-418-11	CARBON 1.2K 5% 1/4W	
R9	1-249-382-11	CARBON 1.2 5% 1/4W	F
R10	1-249-447-11	CARBON 1 5% 1/4W	F
R11	1-247-692-11	CARBON 22 5% 1/4W	
R12	1-249-418-11	CARBON 1.2K 5% 1/4W	
R13	1-215-866-11	METAL OXIDE 330 5% 1W	F
R14	1-247-700-11	CARBON 100 5% 1/4W	

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• The components identified by  $\Delta$  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R15	1-247-709-11	CARBON	510 5% 1/4W	R95	1-215-904-11	METAL OXIDE 100K 5% 2W	F
R16	1-247-709-11	CARBON	510 5% 1/4W				
R17	1-247-700-11	CARBON	100 5% 1/4W	R96	1-215-904-11	METAL OXIDE 100K 5% 2W	F
R18	1-249-425-11	CARBON	4.7K 5% 1/4W	R97	1-215-904-11	METAL OXIDE 100K 5% 2W	F
R19	1-249-419-11	CARBON	1.5K 5% 1/4W	R98	1-215-904-11	METAL OXIDE 100K 5% 2W	F
R20	1-247-838-00	CARBON	2K 5% 1/4W			<VARIABLE RESISTOR>	
R21	1-249-417-11	CARBON	1K 5% 1/4W				
R22	1-249-409-11	CARBON	220 5% 1/4W	RV1	1-237-514-21	RES, ADJ, CERMET 500	
R23	1-249-417-11	CARBON	1K 5% 1/4W	RV2	1-237-515-21	RES, ADJ, CERMET 1K	
R24	1-249-421-11	CARBON	2.2K 5% 1/4W				
						<RELAY>	
R25	1-249-409-11	CARBON	220 5% 1/4W	RY1	1-515-805-11	RELAY, POWER	
R26	1-247-700-11	CARBON	100 5% 1/4W				
R27	1-247-713-11	CARBON	1K 5% 1/4W			<TRANSFORMER>	
R28	1-247-713-11	CARBON	1K 5% 1/4W				
R29	1-247-700-11	CARBON	100 5% 1/4W				
R30	1-215-886-11	METAL OXIDE	100 5% 2W	F			
R31	1-215-886-11	METAL OXIDE	100 5% 2W	F	T1	1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)
R32	1-215-886-11	METAL OXIDE	100 5% 2W	F	T2	1-447-106-11	TRANSFORMER, DRIVE
R33	1-247-697-11	CARBON	56 5% 1/4W	F	T3	1-421-624-12	TRANSFORMER, CURRENT
R34	1-247-697-11	CARBON	56 5% 1/4W	F	T4	1-447-426-12	TRANSFORMER, CONVERTER
					T5	1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)
R35	1-215-863-11	METAL OXIDE	100 5% 1W	F			
R36	1-249-425-11	CARBON	4.7K 5% 1/4W		T6	1-447-106-11	TRANSFORMER, DRIVE
R37	1-249-420-11	CARBON	1.8K 5% 1/4W		T7	1-421-624-12	TRANSFORMER, CURRENT
R38	1-249-429-11	CARBON	10K 5% 1/4W				
R39	1-249-413-11	CARBON	470 5% 1/4W			<THERMISTOR>	
R40	1-215-453-00	METAL	22K 1% 1/4W		TH1	1-800-820-12	THERMISTOR, POWER
R41	1-249-425-11	CARBON	4.7K 5% 1/4W		THP1	1-806-387-12	THERMISTOR (POSITIVE)
R42	1-215-437-00	METAL	4.7K 1% 1/4W		THP2	1-800-686-33	THERMISTOR (POSITIVE)
R43	1-215-435-00	METAL	3.9K 1% 1/4W				
R44	1-215-427-00	METAL	1.8K 1% 1/4W				
R45	1-247-713-11	CARBON	1K 5% 1/4W				
R46	1-249-417-11	CARBON	1K 5% 1/4W				
R47	1-216-995-11	METAL	820 1% 10W				
R48	1-215-866-11	METAL OXIDE	330 5% 1W	F			
ΔR52		METAL OXIDE	2W	F			
ΔR53		METAL	1/4W	F			
R54	1-215-901-00	METAL OXIDE	33K 5% 2W	F			
R55	1-215-426-00	METAL	1.6K 1% 1/4W				
R60	1-249-420-11	CARBON	1.8K 5% 1/4W				
R61	1-249-420-11	CARBON	1.8K 5% 1/4W				
R62	1-249-429-11	CARBON	10K 5% 1/4W				
R64	1-249-426-11	CARBON	5.6K 5% 1/4W				
R65	1-215-437-00	METAL	4.7K 1% 1/4W				
R66	1-215-453-00	METAL	22K 1% 1/4W				
ΔR67		METAL	1/2W				
ΔR68		METAL	1/4W	F			
R74	1-215-889-00	METAL OXIDE	330 5% 2W	F			
R77	1-215-433-00	METAL	3.3K 1% 1/4W				
R78	1-215-433-00	METAL	3.3K 1% 1/4W				
R80	1-202-643-35	SOLID	820K 10% 1/2W				
R81	1-215-461-00	METAL	47K 1% 1/4W				
R82	1-215-461-00	METAL	47K 1% 1/4W				
R83	1-215-461-00	METAL	47K 1% 1/4W				
R84	1-215-459-00	METAL	39K 1% 1/4W				
R85	1-215-449-00	METAL	15K 1% 1/4W				
R86	1-215-437-00	METAL	4.7K 1% 1/4W				
R87	1-249-405-11	CARBON	100 5% 1/4W				
R88	1-249-433-11	CARBON	22K 5% 1/4W				
R89	1-249-429-11	CARBON	10K 5% 1/4W				
R90	1-249-429-11	CARBON	10K 5% 1/4W				
R91	1-249-429-11	CARBON	10K 5% 1/4W				
R92	1-217-295-11	WIREWOUND	5.6 10% 5W	F			
R93	1-215-886-11	METAL OXIDE	100 5% 2W	F			
R94	1-205-538-00	WIREWOUND	4.7 10% 10W				


The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.


Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C9	1-126-104-11	ELECT	470MF 20% 25V	C73	1-124-171-00	ELECT	100MF 20% 160V
C10	1-126-105-11	ELECT	1000MF 20% 25V	C74	1-124-122-11	ELECT	100MF 20% 16V
C11	1-126-104-11	ELECT	470MF 20% 25V	C75	1-124-122-11	ELECT	100MF 20% 16V
C12	1-124-602-00	ELECT	2200MF 20% 25V	C76	$\Delta$ 1-161-953-52	CERAMIC	0.0047MF 20% 400V
C13	1-126-104-11	ELECT	470MF 20% 25V	C77	$\Delta$ 1-161-953-52	CERAMIC	0.0047MF 20% 400V
C14	1-124-602-00	ELECT	2200MF 20% 25V	C78	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C15	1-124-360-00	ELECT	1000MF 20% 16V	C79	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C16	1-126-103-11	ELECT	470MF 20% 16V	C80	1-125-658-11	ELECT	560MF 20% 250V
C17	1-106-375-12	MYLAR	0.022MF 10% 100V	C81	1-125-658-11	ELECT	560MF 20% 250V
C18	1-108-638-11	MYLAR	0.1MF 10% 100V	C82	1-123-369-00	ELECT	4.7MF 20% 25V
C19	1-102-030-00	CERAMIC	330PF 10% 500V	C83	1-101-004-00	CERAMIC	0.01MF 50V
C20	1-162-117-00	CERAMIC	100PF 10% 500V	C84	$\Delta$ 1-136-311-61	FILM	0.47MF 20% 300V
C21	1-102-038-00	CERAMIC	0.001MF 500V	C85	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C22	1-162-117-00	CERAMIC	100PF 10% 500V	C86	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C23	1-106-375-12	MYLAR	0.022MF 10% 100V	C87	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C24	1-108-638-11	MYLAR	0.1MF 10% 100V	C88	$\Delta$ 1-162-578-51	CERAMIC	0.0047MF 20% 400V
C25	1-124-903-11	ELECT	1MF 20% 50V	C89	$\Delta$ 1-136-311-61	FILM	0.47MF 20% 300V
C26	1-101-361-00	CERAMIC	150PF 5% 50V	C90	1-136-171-00	FILM	0.033MF 5% 50V
C27	1-101-361-00	CERAMIC	150PF 5% 50V	C91	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C28	1-126-966-11	ELECT	10MF 20% 16V	C92	1-136-171-00	FILM	0.033MF 5% 50V
C29	1-124-910-11	ELECT	47MF 20% 25V	C93	1-162-599-12	CERAMIC	0.0047MF 20% 400V
C30	1-162-117-00	CERAMIC	100PF 10% 500V	C94	1-102-038-00	CERAMIC	0.001MF 500V
C31	1-102-030-00	CERAMIC	330PF 10% 500V	C95	1-136-173-00	FILM	0.47MF 5% 50V
C32	1-124-903-11	ELECT	1MF 20% 50V	C96	1-102-050-00	CERAMIC	0.01MF 99% 500V
C33	1-101-361-00	CERAMIC	150PF 5% 50V	C97	1-136-173-00	FILM	0.47MF 5% 50V
C34	1-101-361-00	CERAMIC	150PF 5% 50V	C98	1-136-173-00	FILM	0.47MF 5% 50V
C35	1-124-903-11	ELECT	1MF 20% 50V	C99	1-102-050-00	CERAMIC	0.01MF 99% 500V
C36	1-124-910-11	ELECT	47MF 20% 25V	C100	1-162-117-00	CERAMIC	100PF 10% 500V
C37	1-130-734-00	FILM	0.0068MF 5% 50V	C101	1-162-117-00	CERAMIC	100PF 10% 500V
C38	1-136-165-00	FILM	0.1MF 5% 50V	C102	1-136-601-11	FILM	0.01MF 5% 630V
C39	1-136-165-00	FILM	0.1MF 5% 50V	C103	1-136-601-11	FILM	0.01MF 5% 630V
C40	1-123-381-00	ELECT	2.2MF 20% 50V	<DIODE>			
C41	1-102-038-00	CERAMIC	0.001MF 500V	D1	8-719-912-51	DIODE ESAC25-04C	
C42	1-136-165-00	FILM	0.1MF 5% 50V	D2	8-719-918-73	DIODE ESAC25-04N	
C43	1-136-165-00	FILM	0.1MF 5% 50V	D3	8-719-901-73	DIODE ESAD25-04D	
C44	1-126-966-11	ELECT	10MF 20% 16V	D4	8-719-901-73	DIODE ESAD25-04D	
C45	1-162-132-00	CERAMIC	270PF 10% 2KV	D5	8-719-907-24	DIODE ESAC31-02D	
C46	1-126-966-11	ELECT	10MF 20% 16V	D6	8-719-907-24	DIODE ESAC31-02D	
C47	1-136-173-00	FILM	0.47MF 5% 50V	D7	8-719-300-33	DIODE RU-3AM	
C48	1-136-173-00	FILM	0.47MF 5% 50V	D8	8-719-300-52	DIODE CTU-38R	
C49	1-126-966-11	ELECT	10MF 20% 16V	D9	8-719-300-53	DIODE CTU-38S	
C50	1-101-006-00	CERAMIC	0.047MF 50V	D10	8-719-912-51	DIODE ESAC25-04C	
C51	1-101-006-00	CERAMIC	0.047MF 50V	D11	8-719-918-73	DIODE ESAC25-04N	
C52	1-101-006-00	CERAMIC	0.047MF 50V	D12	8-719-911-19	DIODE ISS119	
C53	1-101-006-00	CERAMIC	0.047MF 50V	D13	8-719-911-19	DIODE ISS119	
C54	1-101-006-00	CERAMIC	0.047MF 50V	D14	8-719-100-58	DIODE RD10EB3	
C55	1-126-966-11	ELECT	10MF 20% 16V	D15	8-719-911-19	DIODE ISS119	
C56	1-136-201-11	FILM	0.22MF 5% 400V	D16	8-719-911-19	DIODE ISS119	
C57	1-124-915-11	ELECT	10MF 20% 25V	D17	8-719-911-19	DIODE ISS119	
C58	1-124-902-00	ELECT	0.47MF 20% 50V	D18	8-719-109-89	DIODE RD5.6ESB2	
C59	1-130-734-00	FILM	0.0068MF 5% 50V	D20	8-719-200-02	DIODE 10E-2	
C60	1-102-228-00	CERAMIC	470PF 10% 500V	D21	$\Delta$ 8-719-300-07	DIODE RB406N	
C61	1-102-228-00	CERAMIC	470PF 10% 500V	D22	8-759-157-40	IC UPC574J	
C62	1-102-228-00	CERAMIC	470PF 10% 500V	D23	8-719-911-19	DIODE ISS119	
C63	1-102-228-00	CERAMIC	470PF 10% 500V	D24	8-719-100-58	DIODE RD10EB3	
C64	1-124-024-00	ELECT	4.7MF 20% 350V	D25	8-719-911-19	DIODE ISS119	
C65	1-124-024-00	ELECT	4.7MF 20% 350V	D26	8-719-003-08	THYRISTOR CR3CM-8	
C66	1-162-117-00	CERAMIC	100PF 10% 500V	D27	8-719-982-04	DIODE ERB81-004	
C67	1-162-117-00	CERAMIC	100PF 10% 500V	D28	8-719-982-04	DIODE ERB81-004	
C68	1-162-117-00	CERAMIC	100PF 10% 500V	D29	8-719-982-04	DIODE ERB81-004	
C69	1-124-562-11	ELECT	47MF 20% 200V	D30	8-719-982-04	DIODE ERB81-004	
C70	1-124-171-00	ELECT	100MF 20% 160V	D31	8-719-300-33	DIODE RU-3AM	
C71	1-162-117-00	CERAMIC	100PF 10% 500V				
C72	1-124-562-11	ELECT	47MF 20% 200V				

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- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D32	8-719-300-33	DIODE RU-3AM		R8	1-249-418-11	CARBON	1.2K 5% 1/4W
				R9	1-249-382-11	CARBON	1.2 5% 1/4W F
				R10	1-249-447-11	CARBON	1 5% 1/4W F
		<CONNECTOR>		R11	1-247-692-11	CARBON	22 5% 1/4W
GA1	1-506-348-XX	PIN, CONNECTOR 3P		R12	1-249-418-11	CARBON	1.2K 5% 1/4W
GA2	*1-506-371-00	PIN, CONNECTOR 2P		R13	1-215-866-11	METAL OXIDE	330 5% 1W F
GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P		R14	1-247-700-11	CARBON	100 5% 1/4W
GA4	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P		R15	1-247-709-11	CARBON	510 5% 1/4W
GA5	*1-566-055-11	PIN, CONNECTOR 3P		R16	1-247-709-11	CARBON	510 5% 1/4W
GA6	*1-566-055-11	PIN, CONNECTOR 3P		R17	1-247-700-11	CARBON	100 5% 1/4W
GA7	*1-566-058-11	PIN, CONNECTOR 6P		R18	1-249-425-11	CARBON	4.7K 5% 1/4W
GA8	*1-566-057-11	PIN, CONNECTOR 5P		R19	1-249-419-11	CARBON	1.5K 5% 1/4W
				R20	1-247-838-00	CARBON	2K 5% 1/4W
		<IC>		R21	1-249-417-11	CARBON	1K 5% 1/4W
IC1	1-806-805-11	IC MC5433		R22	1-249-409-11	CARBON	220 5% 1/4W
IC2	8-759-904-94	IC TL494CN		R23	1-249-417-11	CARBON	1K 5% 1/4W
IC3	8-759-904-94	IC TL494CN		R24	1-249-421-11	CARBON	2.2K 5% 1/4W
				R25	1-249-409-11	CARBON	220 5% 1/4W
		<COIL>		R26	1-247-700-11	CARBON	100 5% 1/4W
L3	1-459-643-11	COIL, CHOKE 525UH		R27	1-247-713-11	CARBON	1K 5% 1/4W
L4	1-459-643-11	COIL, CHOKE 525UH		R28	1-247-713-11	CARBON	1K 5% 1/4W
L5	1-459-643-11	COIL, CHOKE 525UH		R29	1-247-700-11	CARBON	100 5% 1/4W
L6	1-459-643-11	COIL, CHOKE 525UH		R30	1-215-886-11	METAL OXIDE	100 5% 2W F
L7	1-459-207-00	COIL, CORE		R31	1-215-886-11	METAL OXIDE	100 5% 2W F
L8	1-459-644-11	COIL, CHOKE 2.9MMH		R32	1-215-886-11	METAL OXIDE	100 5% 2W F
L9	1-459-645-11	COIL, CHOKE 20MMH		R33	1-247-697-11	CARBON	56 5% 1/4W F
L10	1-421-329-00	COIL, CHOKE		R34	1-247-697-11	CARBON	56 5% 1/4W F
L11	1-421-329-00	COIL, CHOKE		R35	1-215-863-11	METAL OXIDE	100 5% 1W F
L12	1-421-329-00	COIL, CHOKE		R36	1-249-425-11	CARBON	4.7K 5% 1/4W
L13	1-421-329-00	COIL, CHOKE		R37	1-249-420-11	CARBON	1.8K 5% 1/4W
L14	1-421-329-00	COIL, CHOKE		R38	1-249-429-11	CARBON	10K 5% 1/4W
L15	1-421-329-00	COIL, CHOKE		R39	1-249-413-11	CARBON	470 5% 1/4W
L16	1-421-329-00	COIL, CHOKE		R40	1-215-453-00	METAL	22K 1% 1/4W
L17	△ 1-421-590-11	TRANSFORMER, LINE FILTER		R41	1-249-425-11	CARBON	4.7K 5% 1/4W
L18	△ 1-421-590-11	TRANSFORMER, LINE FILTER		R42	1-215-437-00	METAL	4.7K 1% 1/4W
				R43	1-215-435-00	METAL	3.9K 1% 1/4W
				R44	1-215-427-00	METAL	1.8K 1% 1/4W
				R45	1-247-713-11	CARBON	1K 5% 1/4W
		<TRANSISTOR>		R46	1-249-417-11	CARBON	1K 5% 1/4W
Q1	8-729-301-76	TRANSISTOR STR8124-R		R47	1-216-995-11	METAL	820 1% 10W
Q2	8-729-301-76	TRANSISTOR STR8124-R		R48	1-215-866-11	METAL OXIDE	330 5% 1W F
Q3	8-729-140-96	TRANSISTOR 2SD774-34		△ R52		METAL OXIDE	2W F
Q4	8-729-140-96	TRANSISTOR 2SD774-34		△ R53		METAL	1/4W
Q5	8-729-140-96	TRANSISTOR 2SD774-34		R54	1-215-901-00	METAL OXIDE	33K 5% 2W F
Q6	8-729-140-96	TRANSISTOR 2SD774-34		R55	1-215-426-00	METAL	1.6K 1% 1/4W
Q7	8-729-140-97	TRANSISTOR 2SB734-34		R60	1-249-420-11	CARBON	1.8K 5% 1/4W
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE		R61	1-249-420-11	CARBON	1.8K 5% 1/4W
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R62	1-249-429-11	CARBON	10K 5% 1/4W
Q10	8-729-313-42	TRANSISTOR 2SD1134-C		R64	1-249-426-11	CARBON	5.6K 5% 1/4W
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		R65	1-215-437-00	METAL	4.7K 1% 1/4W
Q12	8-729-140-96	TRANSISTOR 2SD774-34		R66	1-215-453-00	METAL	22K 1% 1/4W
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		△ R67		METAL	1/2W
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		△ R68		METAL	1/4W
		<RESISTOR>		R74	1-215-889-00	METAL OXIDE	330 5% 2W F
R1	1-215-857-11	METAL OXIDE 10 5% 1W F		R77	1-215-433-00	METAL	3.3K 1% 1/4W
R2	1-215-857-11	METAL OXIDE 10 5% 1W F		R78	1-215-433-00	METAL	3.3K 1% 1/4W
R3	1-247-715-11	CARBON 1.5K 5% 1/4W		R80	△ 1-202-643-35	SOLID	820K 10% 1/2W
R4	1-215-857-11	METAL OXIDE 10 5% 1W F		R81	1-215-461-00	METAL	47K 1% 1/4W
R5	1-215-857-11	METAL OXIDE 10 5% 1W F		R82	1-215-461-00	METAL	47K 1% 1/4W
R6	1-249-447-11	CARBON 1 5% 1/4W F		R83	1-215-461-00	METAL	47K 1% 1/4W
R7	1-247-692-11	CARBON 22 5% 1/4W		R84	1-215-459-00	METAL	39K 1% 1/4W
				R85	1-215-449-00	METAL	15K 1% 1/4W
				R86	1-215-437-00	METAL	4.7K 1% 1/4W



The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R87	1-249-405-11	CARBON 100 5% 1/4W		D16	8-719-911-19	DIODE 1SS119	
R88	1-249-433-11	CARBON 22K 5% 1/4W		D17	8-719-110-08	DIODE RD8.2ESB2	
R89	1-249-429-11	CARBON 10K 5% 1/4W		D18	8-719-911-19	DIODE 1SS119	
R90	1-249-429-11	CARBON 10K 5% 1/4W		D19	8-719-911-19	DIODE 1SS119	
R91	1-249-429-11	CARBON 10K 5% 1/4W					
R92	$\Delta$ 1-217-295-11	WIREWOUND 5.6 10% 5W F				<CONNECTOR>	
R93	1-215-886-11	METAL OXIDE 100 5% 2W F		GA1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	
R94	1-205-538-00	WIREWOUND 4.7 10% 10W				<TRANSISTOR>	
R95	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE	
R96	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
R97	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE	
R98	1-215-904-11	METAL OXIDE 100K 5% 2W F		Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<VARIABLE RESISTOR>		Q5	8-729-119-76	TRANSISTOR 2SA1175-HFE	
RV1	1-237-514-21	RES, ADJ, CERMET 500		Q6	8-729-119-76	TRANSISTOR 2SA1175-HFE	
RV2	1-237-515-21	RES, ADJ, CERMET 1K		Q7	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		<RELAY>		Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
RY1	$\Delta$ 1-515-805-11	RELAY, POWER		Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		<TRANSFORMER>		Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
T1	$\Delta$ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)				<RESISTOR>	
T2	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE		R1	1-249-427-11	CARBON 6.8K 5% 1/4W	
T3	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT		R2	1-249-428-11	CARBON 8.2K 5% 1/4W	
T4	$\Delta$ 1-447-426-12	TRANSFORMER, CONVERTER		R3	1-249-429-11	CARBON 10K 5% 1/4W	
T5	$\Delta$ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)		R4	1-249-427-11	CARBON 6.8K 5% 1/4W	
T6	$\Delta$ 1-447-106-11	TRANSFORMER, DRIVE		R5	1-249-420-11	CARBON 1.8K 5% 1/4W	
T7	$\Delta$ 1-421-624-12	TRANSFORMER, CURRENT		R6	1-249-427-11	CARBON 6.8K 5% 1/4W	
		<THERMISTOR>		R7	1-249-420-11	CARBON 1.8K 5% 1/4W	
TH1	$\Delta$ 1-800-820-12	THERMISTOR, POWER		R8	1-249-429-11	CARBON 10K 5% 1/4W	
THP1	$\Delta$ 1-806-387-12	THERMISTOR (POSITIVE)		R9	1-249-427-11	CARBON 6.8K 5% 1/4W	
THP2	$\Delta$ 1-800-686-33	THERMISTOR (POSITIVE)		R10	1-249-428-11	CARBON 8.2K 5% 1/4W	
		*****		R11	1-249-424-11	CARBON 3.9K 5% 1/4W	
	*1-627-679-11	GB BOARD		R12	1-249-421-11	CARBON 2.2K 5% 1/4W	
		*****		R13	1-249-425-11	CARBON 4.7K 5% 1/4W	
		<CAPACITOR>		R14	1-249-421-11	CARBON 2.2K 5% 1/4W	
C1	1-124-791-11	ELECT 1MF 20% 50V		R15	1-249-424-11	CARBON 3.9K 5% 1/4W	
C2	1-124-791-11	ELECT 1MF 20% 50V		R16	1-249-421-11	CARBON 2.2K 5% 1/4W	
		<DIODE>		R17	1-249-425-11	CARBON 4.7K 5% 1/4W	
D1	8-719-911-19	DIODE 1SS119		R18	1-249-421-11	CARBON 2.2K 5% 1/4W	
D2	8-719-110-08	DIODE RD8.2ESB2		R19	1-249-429-11	CARBON 10K 5% 1/4W	
D3	8-719-911-19	DIODE 1SS119		R20	1-249-429-11	CARBON 10K 5% 1/4W	
D4	8-719-911-19	DIODE 1SS119		R21	1-249-429-11	CARBON 10K 5% 1/4W	
D5	8-719-911-19	DIODE 1SS119		R22	1-249-423-11	CARBON 3.3K 5% 1/4W	
D6	8-719-110-08	DIODE RD8.2ESB2		R23	1-249-423-11	CARBON 3.3K 5% 1/4W	
D7	8-719-812-41	DIODE TLR124		R24	1-249-429-11	CARBON 10K 5% 1/4W	
D8	8-719-911-19	DIODE 1SS119		R25	1-249-429-11	CARBON 10K 5% 1/4W	
D9	8-719-911-19	DIODE 1SS119				*****	
D10	8-719-812-41	DIODE TLR124			*1-617-889-11	C BOARD	
D11	8-719-110-08	DIODE RD8.2ESB2				*****	
D12	8-719-911-19	DIODE 1SS119			$\Delta$ 1-526-771-11	SOCKET, CRT	
D13	8-719-911-19	DIODE 1SS119			1-556-880-81	LEAD ASSY, HIGH-VOLTAGE	
D14	8-719-911-19	DIODE 1SS119				<CAPACITOR>	
D15	8-719-911-19	DIODE 1SS119		C1	1-162-114-00	CERAMIC 0.0047MF 2KV	
				C2	1-162-114-00	CERAMIC 0.0047MF 2KV	
						<CONNECTOR>	



**DC**

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R68	1-216-697-11	METAL CHIP 82K 0.50% 1/10W				*****	
R69	1-216-691-11	METAL CHIP 47K 0.50% 1/10W		1-563-265-11	CONNECTOR, MULTIPLE 10P		
R70	1-216-691-11	METAL CHIP 47K 0.50% 1/10W					
R71	1-216-655-11	METAL CHIP 1.5K 0.50% 1/10W					
		<VARIABLE RESISTOR>				<RESISTOR>	
RV1	1-228-459-00	RES, ADJ, CERMET 10K		R1	1-249-405-11	CARBON 100 5% 1/4W	
RV2	1-228-459-00	RES, ADJ, CERMET 10K		R2	1-249-405-11	CARBON 100 5% 1/4W	
RV3	1-228-459-00	RES, ADJ, CERMET 10K		R3	1-249-405-11	CARBON 100 5% 1/4W	
RV4	1-228-459-00	RES, ADJ, CERMET 10K		R4	1-249-405-11	CARBON 100 5% 1/4W	
RV5	1-228-459-00	RES, ADJ, CERMET 10K		R5	1-249-405-11	CARBON 100 5% 1/4W	
RV6	1-228-459-00	RES, ADJ, CERMET 10K		R6	1-249-405-11	CARBON 100 5% 1/4W	
RV7	1-228-459-00	RES, ADJ, CERMET 10K		R7	1-249-405-11	CARBON 100 5% 1/4W	
RV8	1-228-459-00	RES, ADJ, CERMET 10K				*****	
RV9	1-228-459-00	RES, ADJ, CERMET 10K		*A-1345-731-A	EB BOARD, COMPLETE	*****	
RV10	1-228-459-00	RES, ADJ, CERMET 10K					
RV11	1-228-459-00	RES, ADJ, CERMET 10K		*4-373-965-01	INSULATOR (SMALL)		
RV12	1-228-459-00	RES, ADJ, CERMET 10K		*4-373-966-01	INSULATOR (LARGE)		
RV13	1-228-459-00	RES, ADJ, CERMET 10K					
RV14	1-228-459-00	RES, ADJ, CERMET 10K					
RV15	1-228-459-00	RES, ADJ, CERMET 10K					
RV16	1-228-459-00	RES, ADJ, CERMET 10K				<CAPACITOR>	
RV17	1-228-459-00	RES, ADJ, CERMET 10K		C1	1-124-666-11	ELECT 4.7MF 20% 200V	
RV18	1-228-459-00	RES, ADJ, CERMET 10K		C2	1-124-917-11	ELECT 33MF 20% 25V	
RV19	1-228-459-00	RES, ADJ, CERMET 10K		C3	1-124-791-11	ELECT 1MF 20% 50V	
RV20	1-228-459-00	RES, ADJ, CERMET 10K		C4	1-124-357-11	ELECT 33MF 20% 35V	
RV21	1-228-459-00	RES, ADJ, CERMET 10K		C6	1-130-789-00	FILM 1MF 5% 100V	
RV22	1-228-459-00	RES, ADJ, CERMET 10K		C7	1-106-375-12	MYLAR 0.022MF 10% 200V	
RV23	1-228-459-00	RES, ADJ, CERMET 10K		C8	1-124-666-11	ELECT 4.7MF 20% 200V	
RV24	1-228-459-00	RES, ADJ, CERMET 10K		C9	1-130-479-00	MYLAR 0.0047MF 5% 50V	
RV25	1-228-459-00	RES, ADJ, CERMET 10K		C10	1-124-122-11	ELECT 100MF 20% 25V	
RV26	1-228-459-00	RES, ADJ, CERMET 10K		C11	1-102-973-00	CERAMIC 100PF 5% 50V	
RV27	1-228-459-00	RES, ADJ, CERMET 10K		C12	1-124-122-11	ELECT 100MF 20% 25V	
RV28	1-228-459-00	RES, ADJ, CERMET 10K		C13	1-136-161-00	FILM 0.047MF 5% 50V	
RV29	1-228-459-00	RES, ADJ, CERMET 10K		C14	1-124-915-11	ELECT 10MF 20% 50V	
RV30	1-228-459-00	RES, ADJ, CERMET 10K		C15	1-136-167-00	FILM 0.15MF 5% 50V	
RV31	1-228-462-00	RES, ADJ, CERMET 100K		C16	1-124-046-00	ELECT 10MF 20% 160V	
RV32	1-228-459-00	RES, ADJ, CERMET 10K		C17	1-124-046-00	ELECT 10MF 20% 160V	
RV33	1-228-459-00	RES, ADJ, CERMET 10K		C18	1-124-122-11	ELECT 100MF 20% 25V	
RV41	1-228-459-00	RES, ADJ, CERMET 10K		C19	1-124-122-11	ELECT 100MF 20% 25V	
RV42	1-228-459-00	RES, ADJ, CERMET 10K		C20	1-162-129-00	CERAMIC 150PF 10% 2KV	
RV43	1-228-459-00	RES, ADJ, CERMET 10K		C21	1-136-173-00	FILM 0.47MF 5% 50V	
RV44	1-228-459-00	RES, ADJ, CERMET 10K		C22	1-102-959-00	CERAMIC 22PF 5% 50V	
RV45	1-228-459-00	RES, ADJ, CERMET 10K		C23	1-101-880-00	CERAMIC 47PF 5% 50V	
RV46	1-228-459-00	RES, ADJ, CERMET 10K					
RV47	1-228-459-00	RES, ADJ, CERMET 10K					
RV48	1-228-459-00	RES, ADJ, CERMET 10K				<DIODE>	
RV49	1-228-459-00	RES, ADJ, CERMET 10K		D1	8-719-911-19	DIODE 1SS119	
RV50	1-228-459-00	RES, ADJ, CERMET 10K		D2	8-719-911-19	DIODE 1SS119	
RV51	1-228-459-00	RES, ADJ, CERMET 10K		D3	8-719-911-19	DIODE 1SS119	
RV52	1-228-459-00	RES, ADJ, CERMET 10K		D4	8-719-908-03	DIODE GP08D	
RV53	1-228-459-00	RES, ADJ, CERMET 10K		D5	8-719-908-03	DIODE GP08D	
RV54	1-228-459-00	RES, ADJ, CERMET 10K		D6	8-719-911-19	DIODE 1SS119	
RV55	1-228-459-00	RES, ADJ, CERMET 10K		D7	8-719-911-19	DIODE 1SS119	
RV56	1-228-459-00	RES, ADJ, CERMET 10K		D8	8-719-911-19	DIODE 1SS119	
RV57	1-228-459-00	RES, ADJ, CERMET 10K		D9	8-719-911-19	DIODE 1SS119	
RV58	1-228-459-00	RES, ADJ, CERMET 10K		D10	8-719-911-19	DIODE 1SS119	
RV59	1-228-459-00	RES, ADJ, CERMET 10K		D21	8-719-911-19	DIODE 1SS119	
RV60	1-228-459-00	RES, ADJ, CERMET 10K					
RV61	1-228-462-00	RES, ADJ, CERMET 100K				<COIL>	
		*****		L1	1-459-123-00	COIL, DUST CORE(PAC)	
		*1-627-677-11 V BOARD					

REF.NO. PART NO.

DESCRIPTION

REMARK

REF.NO. PART NO.

DESCRIPTION

REMARK

## &lt;TRANSISTOR&gt;

Q1	8-729-697-92	TRANSISTOR	2SA979-G			
Q2	8-729-140-50	TRANSISTOR	2SC3209LK			
Q3	8-729-255-12	TRANSISTOR	2SC2551-O			
Q4	8-729-200-17	TRANSISTOR	2SA1091-O			
Q5	8-729-208-71	TRANSISTOR	2SC3298B-O			
Q6	8-729-208-38	TRANSISTOR	2SA1306A-O			
Q7	8-729-386-12	TRANSISTOR	2SB861-C			
Q8	8-729-255-12	TRANSISTOR	2SC2551-O			
Q9	8-729-697-92	TRANSISTOR	2SA979-G			
Q10	8-729-140-96	TRANSISTOR	2SD774-34			
Q11	8-729-140-97	TRANSISTOR	2SB734-34			
Q12	8-729-306-92	TRANSISTOR	2SD669A-C			
Q13	8-729-306-92	TRANSISTOR	2SD669A-C			
Q14	8-729-255-12	TRANSISTOR	2SC2551-O			
Q15	8-729-255-12	TRANSISTOR	2SC2551-O			
Q16	8-729-255-12	TRANSISTOR	2SC2551-O			
Q17	8-729-200-17	TRANSISTOR	2SA1091-O			
Q18	8-729-119-80	TRANSISTOR	2SC2688-LK			
Q19	8-729-119-80	TRANSISTOR	2SC2688-LK			

## &lt;RESISTOR&gt;

R1	1-249-429-11	CARBON	10K	5%	1/4W	
R2	1-249-433-11	CARBON	22K	5%	1/4W	
R3	1-249-425-11	CARBON	4.7K	5%	1/4W	
R4	1-249-430-11	CARBON	12K	5%	1/4W	
R5	1-249-426-11	CARBON	5.6K	5%	1/4W	
R6	1-249-429-11	CARBON	10K	5%	1/4W	
R7	1-216-489-11	METAL OXIDE	27K	5%	3W	F
R8	1-247-802-11	CARBON	62	5%	1/4W	
R9	1-249-414-11	CARBON	560	5%	1/4W	
R10	1-249-448-11	CARBON	1.2	5%	1/4W	F
R11	1-249-448-11	CARBON	1.2	5%	1/4W	F
R12	1-216-351-00	METAL OXIDE	1.5	5%	1W	F
R13	1-216-431-11	METAL OXIDE	560	5%	1W	F
R14	1-215-866-11	METAL OXIDE	330	5%	1W	F
R15	1-249-425-11	CARBON	4.7K	5%	1/4W	
R16	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R17	1-247-700-11	CARBON	100	5%	1/4W	F
R18	1-215-873-00	METAL OXIDE	4.7K	5%	1W	F
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R21	1-249-425-11	CARBON	4.7K	5%	1/4W	
R22	1-249-423-11	CARBON	3.3K	5%	1/4W	
R23	1-249-425-11	CARBON	4.7K	5%	1/4W	
R24	1-249-417-11	CARBON	1K	5%	1/4W	
R25	1-249-417-11	CARBON	1K	5%	1/4W	
R26	1-249-421-11	CARBON	2.2K	5%	1/4W	
R27	1-249-421-11	CARBON	2.2K	5%	1/4W	
R28	1-249-405-11	CARBON	100	5%	1/4W	
R29	1-249-452-11	CARBON	2.7	5%	1/4W	F
R30	1-249-452-11	CARBON	2.7	5%	1/4W	F
R31	1-249-407-11	CARBON	150	5%	1/4W	F
R32	1-216-351-00	METAL OXIDE	1.5	5%	1W	F
R33	1-215-421-00	METAL	1K	1%	1/4W	
R34	1-215-445-00	METAL	10K	1%	1/4W	
R35	1-249-423-11	CARBON	3.3K	5%	1/4W	
R36	1-216-465-11	METAL OXIDE	27K	5%	2W	F
R37	1-249-401-11	CARBON	47	5%	1/4W	
R38	1-249-425-11	CARBON	4.7K	5%	1/4W	
R39	1-215-445-00	METAL	10K	1%	1/4W	
R40	1-215-453-00	METAL	22K	1%	1/4W	

R41	1-215-421-00	METAL	1K	1%	1/4W	
R42	1-247-688-11	CARBON	10	5%	1/4W	F
R43	1-247-688-11	CARBON	10	5%	1/4W	F
R44	1-215-865-11	METAL OXIDE	220	5%	1W	F
R45	1-247-688-11	CARBON	10	5%	1/4W	F
R51	1-249-411-11	CARBON	330	5%	1/4W	

## &lt;TRANSFORMER&gt;

T1	1-421-504-00	TRANSFORMER, FERRITE (VPT)				
T2	1-407-849-00	TRANSFORMER, D.F				

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\*A-1345-981-A DB BOARD, COMPLETE  
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3-618-225-00 NUT, PLATE

## &lt;CAPACITOR&gt;

C3	1-102-963-00	CERAMIC	33PF	5%	50V	
C4	1-136-165-00	FILM	0.1MF	5%	50V	
C5	1-136-161-00	FILM	0.047MF	5%	50V	
C6	1-161-051-00	CERAMIC	0.01MF	10%	50V	
C7	1-124-589-11	ELECT	47MF	20%	16V	
C8	1-136-153-00	FILM	0.01MF	5%	50V	
C9	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C10	1-136-161-00	FILM	0.047MF	5%	50V	
C11	1-102-973-00	CERAMIC	100PF	5%	50V	
C12	1-136-165-00	FILM	0.1MF	5%	50V	
C13	1-136-161-00	FILM	0.047MF	5%	50V	
C14	1-102-824-00	CERAMIC	470PF	5%	50V	
C15	1-136-165-00	FILM	0.1MF	5%	50V	
C16	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C17	1-136-153-00	FILM	0.01MF	5%	50V	
C18	1-161-051-00	CERAMIC	0.01MF	10%	50V	
C19	1-124-589-11	ELECT	47MF	20%	16V	
C20	1-124-589-11	ELECT	47MF	20%	16V	
C21	1-161-051-00	CERAMIC	0.01MF	10%	50V	
C22	1-124-589-11	ELECT	47MF	20%	16V	
C23	1-163-157-00	FILM	0.022MF	5%	50V	
C24	1-136-165-00	FILM	0.1MF	5%	50V	
C25	1-136-153-00	FILM	0.01MF	5%	50V	
C26	1-136-161-00	FILM	0.047MF	5%	50V	
C27	1-163-157-00	FILM	0.022MF	5%	50V	
C28	1-136-165-00	FILM	0.1MF	5%	50V	
C29	1-136-153-00	FILM	0.01MF	5%	50V	
C30	1-136-161-00	FILM	0.047MF	5%	50V	
C31	1-124-589-11	ELECT	47MF	20%	16V	
C32	1-161-051-00	CERAMIC	0.01MF	10%	50V	
C33	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C34	1-136-161-00	FILM	0.047MF	5%	50V	
C35	1-102-973-00	CERAMIC	100PF	5%	50V	
C36	1-136-165-00	FILM	0.1MF	5%	50V	
C37	1-136-161-00	FILM	0.047MF	5%	50V	
C38	1-102-824-00	CERAMIC	470PF	5%	50V	
C39	1-136-165-00	FILM	0.1MF	5%	50V	
C40	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C41	1-136-153-00	FILM	0.01MF	5%	50V	
C42	1-161-051-00	CERAMIC	0.01MF	10%	50V	
C43	1-124-589-11	ELECT	47MF	20%	16V	
C44	1-124-589-11	ELECT	47MF	20%	16V	
C45	1-102-074-00	CERAMIC	0.001MF	10%	50V	

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DB

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q47	8-729-900-65	TRANSISTOR DTA144ES		R63	1-215-453-00	METAL	22K 1% 1/4W
Q49	8-729-900-89	TRANSISTOR DTC144ES		R64	1-249-429-11	CARBON	10K 5% 1/4W
Q101	8-729-900-89	TRANSISTOR DTC144ES					
<RESISTOR>				R65	1-249-405-11	CARBON	100 5% 1/4W
R3	1-249-423-11	CARBON	3.3K 5% 1/4W	R66	1-249-417-11	CARBON	1K 5% 1/4W
R4	1-249-441-11	CARBON	100K 5% 1/4W	R67	1-249-433-11	CARBON	22K 5% 1/4W
R5	1-249-429-11	CARBON	10K 5% 1/4W	R68	1-249-425-11	CARBON	4.7K 5% 1/4W
R6	1-249-420-11	CARBON	1.8K 5% 1/4W	R69	1-249-435-11	CARBON	33K 5% 1/4W
R7	1-249-429-11	CARBON	10K 5% 1/4W				
R8	1-249-429-11	CARBON	10K 5% 1/4W	R70	1-249-421-11	CARBON	2.2K 5% 1/4W
R9	1-249-425-11	CARBON	4.7K 5% 1/4W	R71	1-249-417-11	CARBON	1K 5% 1/4W
R10	1-215-467-00	METAL	82K 1% 1/4W	R72	1-249-433-11	CARBON	22K 5% 1/4W
R11	1-215-439-00	METAL	5.6K 1% 1/4W	R73	1-249-425-11	CARBON	4.7K 5% 1/4W
R12	1-215-477-00	METAL	220K 1% 1/4W	R74	1-247-903-00	CARBON	1M 5% 1/4W
R13	1-249-429-11	CARBON	10K 5% 1/4W				
R14	1-249-433-11	CARBON	22K 5% 1/4W	R75	1-249-429-11	CARBON	10K 5% 1/4W
R15	1-249-433-11	CARBON	22K 5% 1/4W	R76	1-249-429-11	CARBON	10K 5% 1/4W
R16	1-249-441-11	CARBON	100K 5% 1/4W	R77	1-249-429-11	CARBON	10K 5% 1/4W
R17	1-249-433-11	CARBON	22K 5% 1/4W	R78	1-215-469-00	METAL	100K 1% 1/4W
R18	1-215-477-00	METAL	220K 1% 1/4W	R79	1-249-405-11	CARBON	100 5% 1/4W
R19	1-249-429-11	CARBON	10K 5% 1/4W				
R20	1-249-433-11	CARBON	22K 5% 1/4W	R80	1-249-417-11	CARBON	1K 5% 1/4W
R21	1-249-433-11	CARBON	22K 5% 1/4W	R81	1-249-433-11	CARBON	22K 5% 1/4W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R82	1-249-425-11	CARBON	4.7K 5% 1/4W
R23	1-249-429-11	CARBON	10K 5% 1/4W	R83	1-249-435-11	CARBON	33K 5% 1/4W
R24	1-215-453-00	METAL	22K 1% 1/4W	R84	1-249-421-11	CARBON	2.2K 5% 1/4W
R25	1-249-405-11	CARBON	100 5% 1/4W				
R26	1-249-417-11	CARBON	1K 5% 1/4W	R85	1-249-417-11	CARBON	1K 5% 1/4W
R27	1-249-433-11	CARBON	22K 5% 1/4W	R86	1-249-433-11	CARBON	22K 5% 1/4W
R28	1-249-425-11	CARBON	4.7K 5% 1/4W	R87	1-249-425-11	CARBON	4.7K 5% 1/4W
R29	1-249-435-11	CARBON	33K 5% 1/4W	R88	1-247-895-00	CARBON	470K 5% 1/4W
R30	1-249-421-11	CARBON	2.2K 5% 1/4W	R89	1-247-895-00	CARBON	470K 5% 1/4W
R31	1-249-417-11	CARBON	1K 5% 1/4W				
R32	1-249-433-11	CARBON	22K 5% 1/4W	R90	1-249-429-11	CARBON	10K 5% 1/4W
R33	1-249-425-11	CARBON	4.7K 5% 1/4W	R91	1-249-429-11	CARBON	10K 5% 1/4W
R34	1-247-903-00	CARBON	1M 5% 1/4W	R92	1-215-469-00	METAL	100K 1% 1/4W
R35	1-249-429-11	CARBON	10K 5% 1/4W	R93	1-249-405-11	CARBON	100 5% 1/4W
R36	1-249-429-11	CARBON	10K 5% 1/4W	R94	1-249-417-11	CARBON	1K 5% 1/4W
R37	1-249-429-11	CARBON	10K 5% 1/4W				
R38	1-215-445-00	METAL	10K 1% 1/4W	R95	1-249-433-11	CARBON	22K 5% 1/4W
R39	1-215-445-00	METAL	10K 1% 1/4W	R96	1-249-425-11	CARBON	4.7K 5% 1/4W
R40	1-249-429-11	CARBON	10K 5% 1/4W	R97	1-249-435-11	CARBON	33K 5% 1/4W
R42	1-249-441-11	CARBON	100K 5% 1/4W	R98	1-249-421-11	CARBON	2.2K 5% 1/4W
R43	1-249-405-11	CARBON	100 5% 1/4W	R99	1-249-412-11	CARBON	390 5% 1/4W
R44	1-249-417-11	CARBON	1K 5% 1/4W				
R45	1-215-445-00	METAL	10K 1% 1/4W	R100	1-249-433-11	CARBON	22K 5% 1/4W
R46	1-215-445-00	METAL	10K 1% 1/4W	R101	1-249-425-11	CARBON	4.7K 5% 1/4W
R47	1-249-429-11	CARBON	10K 5% 1/4W	R102	1-247-895-00	CARBON	470K 5% 1/4W
R48	1-247-895-00	CARBON	470K 5% 1/4W	R103	1-247-895-00	CARBON	470K 5% 1/4W
R49	1-215-451-00	METAL	18K 1% 1/4W	R104	1-249-429-11	CARBON	10K 5% 1/4W
R50	1-215-451-00	METAL	18K 1% 1/4W				
R51	1-249-429-11	CARBON	10K 5% 1/4W	R105	1-249-429-11	CARBON	10K 5% 1/4W
R52	1-215-451-00	METAL	18K 1% 1/4W	R106	1-215-397-00	METAL	100 1% 1/4W
R53	1-247-895-00	CARBON	470K 5% 1/4W	R107	1-249-393-11	CARBON	10 5% 1/4W
R54	1-215-451-00	METAL	18K 1% 1/4W	R108	1-249-393-11	CARBON	10 5% 1/4W
R55	1-249-429-11	CARBON	10K 5% 1/4W	R109	1-249-429-11	CARBON	10K 5% 1/4W
R57	1-249-405-11	CARBON	100 5% 1/4W				
R58	1-249-405-11	CARBON	100 5% 1/4W	R110	1-215-437-00	METAL	4.7K 1% 1/4W
R59	1-249-421-11	CARBON	2.2K 5% 1/4W	R111	1-249-421-11	CARBON	2.2K 5% 1/4W
R60	1-215-445-00	METAL	10K 1% 1/4W	R112	1-249-405-11	CARBON	100 5% 1/4W
R61	1-249-429-11	CARBON	10K 5% 1/4W	R113	1-249-429-11	CARBON	10K 5% 1/4W
R62	1-215-445-00	METAL	10K 1% 1/4W	R114	1-215-441-00	METAL	6.8K 1% 1/4W
				R115	1-215-469-00	METAL	100K 1% 1/4W
				R116	1-249-421-11	CARBON	2.2K 5% 1/4W
				R117	1-249-405-11	CARBON	100 5% 1/4W
				R118	1-249-405-11	CARBON	100 5% 1/4W
				R120	1-215-421-00	METAL	1K 1% 1/4W
				R121	1-249-425-11	CARBON	4.7K 5% 1/4W
				R122	1-215-461-00	METAL	47K 1% 1/4W
				R123	1-215-437-00	METAL	4.7K 1% 1/4W
				R124	1-215-437-00	METAL	4.7K 1% 1/4W
				R125	1-215-469-00	METAL	100K 1% 1/4W
				R126	1-249-435-11	CARBON	33K 5% 1/4W

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R128	1-202-731-00	SOLID	10M 5% 1/2W	C31	1-102-973-00	CERAMIC	100PF 5% 50V
R129	1-215-479-00	METAL	270K 1% 1/4W	C32	1-101-361-00	CERAMIC	150PF 5% 50V
R130	1-247-830-11	CARBON	910 5% 1/4W	C33	1-130-871-11	FILM	0.01MF 5% 50V
R132	1-247-830-11	CARBON	910 5% 1/4W	C34	1-126-301-11	ELECT	1MF 20% 50V
R169	1-247-903-00	CARBON	1M 5% 1/4W	C35	1-161-051-00	CERAMIC	0.01MF 10% 50V
R170	1-247-903-00	CARBON	1M 5% 1/4W	C36	1-102-824-00	CERAMIC	470PF 5% 50V
R171	1-249-441-11	CARBON	100K 5% 1/4W	C38	1-102-824-00	CERAMIC	470PF 5% 50V
R172	1-249-429-11	CARBON	10K 5% 1/4W	C39	1-161-051-00	CERAMIC	0.01MF 10% 50V
R173	1-249-429-11	CARBON	10K 5% 1/4W	C40	1-130-871-11	FILM	0.01MF 5% 50V
R174	1-249-421-11	CARBON	2.2K 5% 1/4W	C41	1-126-301-11	ELECT	1MF 20% 50V
R175	1-249-421-11	CARBON	2.2K 5% 1/4W	C42	1-130-871-11	FILM	0.01MF 5% 50V
R176	1-249-425-11	CARBON	4.7K 5% 1/4W	C43	1-126-301-11	ELECT	1MF 20% 50V
R177	1-249-421-11	CARBON	2.2K 5% 1/4W	C44	1-124-465-00	ELECT	0.47MF 20% 50V
R185	1-249-417-11	CARBON	1K 5% 1/4W	C45	1-126-157-11	ELECT	10MF 20% 16V
R186	1-249-429-11	CARBON	10K 5% 1/4W	C46	1-126-157-11	ELECT	10MF 20% 16V
R187	1-249-435-11	CARBON	33K 5% 1/4W	C47	1-161-051-00	CERAMIC	0.01MF 10% 50V
R188	1-249-429-11	CARBON	10K 5% 1/4W	C48	1-161-051-00	CERAMIC	0.01MF 10% 50V
R189	1-249-435-11	CARBON	33K 5% 1/4W	C49	1-161-051-00	CERAMIC	0.01MF 10% 50V
R190	1-249-417-11	CARBON	1K 5% 1/4W	C50	1-161-051-00	CERAMIC	0.01MF 10% 50V
R191	1-249-423-11	CARBON	3.3K 5% 1/4W	C51	1-161-051-00	CERAMIC	0.01MF 10% 50V
R192	1-215-453-00	METAL	22K 1% 1/4W	C52	1-161-051-00	CERAMIC	0.01MF 10% 50V
R193	1-249-417-11	CARBON	1K 5% 1/4W	C53	1-161-051-00	CERAMIC	0.01MF 10% 50V
R194	1-249-417-11	CARBON	1K 5% 1/4W	C54	1-126-157-11	ELECT	10MF 20% 16V
R195	1-249-429-11	CARBON	10K 5% 1/4W	C55	1-126-157-11	ELECT	10MF 20% 16V
R301	1-249-437-11	CARBON	47K 5% 1/4W	C56	1-161-051-00	CERAMIC	0.01MF 10% 50V
*****				C57	1-136-474-11	FILM	0.1MF 5% 100V
*A-1345-982-A DA BOARD, COMPLETE				C58	1-130-871-11	FILM	0.01MF 5% 50V
*****				C59	1-161-051-00	CERAMIC	0.01MF 10% 50V
3-618-225-00 NUT, PLATE				C60	1-130-871-11	FILM	0.01MF 5% 50V
<CAPACITOR>				C61	1-161-051-00	CERAMIC	0.01MF 10% 50V
C1	1-126-157-11	ELECT	10MF 20% 16V	C62	1-130-871-11	FILM	0.01MF 5% 50V
C2	1-126-157-11	ELECT	10MF 20% 16V	C63	1-161-051-00	CERAMIC	0.01MF 10% 50V
C3	1-161-051-00	CERAMIC	0.01MF 10% 50V	C64	1-130-871-11	FILM	0.01MF 5% 50V
C4	1-101-361-00	CERAMIC	150PF 5% 50V	C65	1-161-051-00	CERAMIC	0.01MF 10% 50V
C5	1-161-051-00	CERAMIC	0.01MF 10% 50V	C66	1-161-051-00	CERAMIC	0.01MF 10% 50V
C6	1-161-051-00	CERAMIC	0.01MF 10% 50V	C67	1-126-163-11	ELECT	4.7MF 20% 25V
C7	1-101-361-00	CERAMIC	150PF 5% 50V	C68	1-101-361-00	CERAMIC	150PF 5% 50V
C8	1-102-527-11	CERAMIC	82PF 5% 50V	C69	1-126-157-11	ELECT	10MF 20% 16V
C9	1-101-361-00	CERAMIC	150PF 5% 50V	C70	1-126-157-11	ELECT	10MF 20% 16V
C10	1-106-359-00	MYLAR	0.0047MF 5% 100V	C71	1-126-157-11	ELECT	10MF 20% 16V
C11	1-130-738-00	FILM	0.015MF 5% 100V	C72	1-126-157-11	ELECT	10MF 20% 16V
C12	1-163-157-00	FILM	0.022MF 5% 50V	C73	1-161-051-00	CERAMIC	0.01MF 10% 50V
C13	1-136-155-00	FILM	0.015MF 5% 50V	C74	1-126-157-11	ELECT	10MF 20% 16V
C14	1-163-157-00	FILM	0.022MF 5% 50V	C75	1-126-157-11	ELECT	10MF 20% 16V
C15	1-130-479-00	MYLAR	0.0047MF 5% 50V	C76	1-136-165-00	FILM	0.1MF 5% 50V
C16	1-124-589-11	ELECT	47MF 20% 16V	C77	1-136-165-00	FILM	0.1MF 5% 50V
C17	1-124-234-00	ELECT	22MF 20% 16V	C78	1-161-051-00	CERAMIC	0.01MF 10% 50V
C18	1-124-234-00	ELECT	22MF 20% 16V	C80	1-101-004-00	CERAMIC	0.01MF 5% 50V
C19	1-161-051-00	CERAMIC	0.01MF 10% 50V	C90	1-136-161-00	FILM	0.047MF 5% 50V
C20	1-130-871-11	FILM	0.01MF 5% 50V	C100	1-136-165-00	FILM	0.1MF 5% 50V
C21	1-126-301-11	ELECT	1MF 20% 50V	C101	1-136-165-00	FILM	0.1MF 5% 50V
C22	1-130-871-11	FILM	0.01MF 5% 50V	C102	1-102-978-00	CERAMIC	220PF 5% 50V
C23	1-126-301-11	ELECT	1MF 20% 50V	<DIODE>			
C24	1-126-301-11	ELECT	1MF 20% 50V	D1	8-719-911-19	DIODE 1SS119	
C25	1-126-301-11	ELECT	1MF 20% 50V	D2	8-719-911-19	DIODE 1SS119	
C26	1-161-051-00	CERAMIC	0.01MF 10% 50V	D3	8-719-109-97	DIODE RD6.8ESB2	
C27	1-126-157-11	ELECT	10MF 20% 16V	D4	8-719-109-97	DIODE RD6.8ESB2	
C28	1-126-157-11	ELECT	10MF 20% 16V	D5	8-719-110-31	DIODE RD12ESB2	
C29	1-126-301-11	ELECT	1MF 20% 50V	D6	8-719-110-31	DIODE RD12ESB2	
C30	1-161-051-00	CERAMIC	0.01MF 10% 50V	D7	8-719-911-19	DIODE 1SS119	
				D8	8-719-911-19	DIODE 1SS119	
				D9	8-719-110-03	DIODE RD7.5ESB2	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D10	8-719-110-03	DIODE RD7.5ESB2		Q12	8-729-900-89	TRANSISTOR DTC144ES	
D11	8-719-110-41	DIODE RD15ESB2		Q13	8-729-900-89	TRANSISTOR DTC144ES	
D12	8-719-109-89	DIODE RD5.6ESB2		Q14	8-729-900-89	TRANSISTOR DTC144ES	
D13	8-719-911-19	DIODE 1SS119		Q15	8-729-900-89	TRANSISTOR DTC144ES	
D14	8-719-911-19	DIODE 1SS119		Q16	8-729-900-89	TRANSISTOR DTC144ES	
D15	8-719-911-19	DIODE 1SS119		Q17	8-729-900-89	TRANSISTOR DTC144ES	
D18	8-719-911-19	DIODE 1SS119		Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D19	8-719-911-19	DIODE 1SS119		Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<CONNECTOR>				Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA1	*1-566-060-11	PIN, CONNECTOR 8P		Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA2	*1-566-056-11	PIN, CONNECTOR 4P		Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA3	*1-566-062-11	PIN, CONNECTOR 10P		Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA4	*1-566-058-11	PIN, CONNECTOR 6P		Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE	
DA5	*1-566-055-11	PIN, CONNECTOR 3P		Q31	8-729-900-89	TRANSISTOR DTC144ES	
DA6	*1-566-058-11	PIN, CONNECTOR 6P		<RESISTOR>			
DA7	*1-566-056-11	PIN, CONNECTOR 4P		R1	1-215-461-00	METAL 47K 1%	1/4W
<IC>				R2	1-249-417-11	CARBON 1K 5%	1/4W
IC1	8-759-984-27	IC M884027B		R3	1-249-430-11	CARBON 12K 5%	1/4W
IC2	8-759-040-11	IC MC14011BCP		R4	1-249-417-11	CARBON 1K 5%	1/4W
IC3	8-759-000-58	IC MC14093BCP		R5	1-249-422-11	CARBON 2.7K 5%	1/4W
IC4	8-751-580-00	IC CX-158		R6	1-247-840-00	CARBON 2.4K 5%	1/4W
IC5	8-759-990-82	IC TL082CP		R7	1-215-462-00	METAL 51K 1%	1/4W
IC6	8-759-990-82	IC TL082CP		R8	1-249-417-11	CARBON 1K 5%	1/4W
IC7	8-759-014-96	IC MC1496P		R9	1-249-417-11	CARBON 1K 5%	1/4W
IC8	8-759-729-03	IC NJM2903D		R10	1-249-423-11	CARBON 3.3K 5%	1/4W
IC9	8-759-990-82	IC TL082CP		R11	1-249-419-11	CARBON 1.5K 5%	1/4W
IC10	8-759-729-03	IC NJM2903D		R12	1-249-429-11	CARBON 10K 5%	1/4W
IC11	8-759-990-82	IC TL082CP		R13	1-249-424-11	CARBON 3.9K 5%	1/4W
IC12	8-759-014-96	IC MC1496P		R14	1-249-419-11	CARBON 1.5K 5%	1/4W
IC13	8-759-000-49	IC MC14066BCP		R15	1-249-410-11	CARBON 270 5%	1/4W
IC14	8-759-000-49	IC MC14066BCP		R16	1-249-417-11	CARBON 1K 5%	1/4W
IC15	8-759-000-49	IC MC14066BCP		R17	1-215-427-00	METAL 1.8K 1%	1/4W
IC16	8-759-000-49	IC MC14066BCP		R18	1-215-435-00	METAL 3.9K 1%	1/4W
IC17	8-759-145-58	IC UPC4558C		R19	1-215-443-00	METAL 8.2K 1%	1/4W
IC18	8-759-909-70	IC CX23025		R20	1-249-400-11	CARBON 39 5%	1/4W F
IC19	8-759-145-58	IC UPC4558C		R21	1-249-429-11	CARBON 10K 5%	1/4W
IC20	8-759-145-58	IC UPC4558C		R22	1-215-445-00	METAL 10K 1%	1/4W
IC21	8-759-145-58	IC UPC4558C		R23	1-249-429-11	CARBON 10K 5%	1/4W
IC22	8-759-145-58	IC UPC4558C		R24	1-249-427-11	CARBON 6.8K 5%	1/4W
IC23	8-759-145-58	IC UPC4558C		R25	1-249-393-11	CARBON 10 5%	1/4W
IC24	8-759-929-62	IC LM7812CT		R26	1-215-439-00	METAL 5.6K 1%	1/4W
IC25	8-759-929-65	IC LM7912CT		R27	1-249-429-11	CARBON 10K 5%	1/4W
IC26	8-759-990-82	IC TL082CP		R28	1-215-421-00	METAL 1K 1%	1/4W
<COIL>				R29	1-215-458-00	METAL 36K 1%	1/4W
L1	1-407-504-00	INDUCTOR 10MMH		R30	1-249-429-11	CARBON 10K 5%	1/4W
<TRANSISTOR>				R31	1-249-427-11	CARBON 6.8K 5%	1/4W
Q1	8-729-900-89	TRANSISTOR DTC144ES		R32	1-249-393-11	CARBON 10 5%	1/4W
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R33	1-249-425-11	CARBON 4.7K 5%	1/4W
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R34	1-249-424-11	CARBON 3.9K 5%	1/4W
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE		R35	1-247-800-11	CARBON 51 5%	1/4W
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE		R36	1-249-417-11	CARBON 1K 5%	1/4W
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE		R37	1-249-417-11	CARBON 1K 5%	1/4W
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE		R38	1-249-417-11	CARBON 1K 5%	1/4W
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE		R39	1-249-417-11	CARBON 1K 5%	1/4W
Q9	8-729-800-10	TRANSISTOR 2SC3068		R40	1-249-417-11	CARBON 1K 5%	1/4W
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE		R41	1-247-800-11	CARBON 51 5%	1/4W
				R42	1-249-430-11	CARBON 12K 5%	1/4W
				R43	1-249-419-11	CARBON 1.5K 5%	1/4W
				R44	1-249-424-11	CARBON 3.9K 5%	1/4W
				R45	1-249-429-11	CARBON 10K 5%	1/4W
				R46	1-249-429-11	CARBON 10K 5%	1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R47	1-249-431-11	CARBON	15K 5% 1/4W	R115	1-247-830-11	CARBON	910 5% 1/4W
R48	1-249-429-11	CARBON	10K 5% 1/4W	R116	1-247-830-11	CARBON	910 5% 1/4W
R49	1-249-429-11	CARBON	10K 5% 1/4W	R123	1-215-445-00	METAL	10K 1% 1/4W
R50	1-249-429-11	CARBON	10K 5% 1/4W	R124	1-215-433-00	METAL	3.3K 1% 1/4W
R51	1-249-429-11	CARBON	10K 5% 1/4W	R125	1-215-443-00	METAL	8.2K 1% 1/4W
R52	1-249-417-11	CARBON	1K 5% 1/4W	R126	1-215-437-00	METAL	4.7K 1% 1/4W
R53	1-247-903-00	CARBON	1M 5% 1/4W	R127	1-249-417-11	CARBON	1K 5% 1/4W
R54	1-249-421-11	CARBON	2.2K 5% 1/4W	R128	1-249-417-11	CARBON	1K 5% 1/4W
R55	1-249-417-11	CARBON	1K 5% 1/4W	R129	1-249-405-11	CARBON	100 5% 1/4W
R56	1-249-435-11	CARBON	33K 5% 1/4W	R130	1-249-429-11	CARBON	10K 5% 1/4W
R57	1-249-429-11	CARBON	10K 5% 1/4W	R131	1-215-445-00	METAL	10K 1% 1/4W
R58	1-249-423-11	CARBON	3.3K 5% 1/4W	R132	1-215-445-00	METAL	10K 1% 1/4W
R59	1-249-429-11	CARBON	10K 5% 1/4W	R133	1-215-461-00	METAL	47K 1% 1/4W
R60	1-215-445-00	METAL	10K 1% 1/4W	R134	1-215-447-00	METAL	12K 1% 1/4W
R61	1-249-429-11	CARBON	10K 5% 1/4W	R135	1-249-427-11	CARBON	6.8K 5% 1/4W
R62	1-249-427-11	CARBON	6.8K 5% 1/4W	R136	1-249-429-11	CARBON	10K 5% 1/4W
R63	1-249-393-11	CARBON	10 5% 1/4W	R137	1-249-405-11	CARBON	100 5% 1/4W
R64	1-249-429-11	CARBON	10K 5% 1/4W	R138	1-249-417-11	CARBON	1K 5% 1/4W
R65	1-249-433-11	CARBON	22K 5% 1/4W	R139	1-249-417-11	CARBON	1K 5% 1/4W
R66	1-249-433-11	CARBON	22K 5% 1/4W	R140	1-215-421-00	METAL	1K 1% 1/4W
R67	1-249-429-11	CARBON	10K 5% 1/4W	R141	1-249-429-11	CARBON	10K 5% 1/4W
R68	1-247-903-00	CARBON	1M 5% 1/4W	R142	1-215-457-00	METAL	33K 1% 1/4W
R69	1-249-421-11	CARBON	2.2K 5% 1/4W	R143	1-215-457-00	METAL	33K 1% 1/4W
R70	1-249-435-11	CARBON	33K 5% 1/4W	R144	1-249-429-11	CARBON	10K 5% 1/4W
R71	1-249-429-11	CARBON	10K 5% 1/4W	R145	1-215-481-00	METAL	330K 1% 1/4W
R72	1-249-423-11	CARBON	3.3K 5% 1/4W	R146	1-249-429-11	CARBON	10K 5% 1/4W
R74	1-249-429-11	CARBON	10K 5% 1/4W	R147	1-249-433-11	CARBON	22K 5% 1/4W
R76	1-249-433-11	CARBON	22K 5% 1/4W	R148	1-249-405-11	CARBON	100 5% 1/4W
R77	1-249-439-11	CARBON	68K 5% 1/4W	R149	1-215-421-00	METAL	1K 1% 1/4W
R79	1-249-421-11	CARBON	2.2K 5% 1/4W	R150	1-215-457-00	METAL	33K 1% 1/4W
R80	1-249-435-11	CARBON	33K 5% 1/4W	R151	1-215-457-00	METAL	33K 1% 1/4W
R81	1-249-429-11	CARBON	10K 5% 1/4W	R152	1-215-481-00	METAL	330K 1% 1/4W
R82	1-249-423-11	CARBON	3.3K 5% 1/4W	R153	1-215-431-00	METAL	2.7K 1% 1/4W
R83	1-249-429-11	CARBON	10K 5% 1/4W	R154	1-215-413-00	METAL	470 1% 1/4W
R84	1-215-445-00	METAL	10K 1% 1/4W	R155	1-249-429-11	CARBON	10K 5% 1/4W
R85	1-249-427-11	CARBON	6.8K 5% 1/4W	R156	1-249-429-11	CARBON	10K 5% 1/4W
R86	1-249-429-11	CARBON	10K 5% 1/4W	R157	1-249-433-11	CARBON	22K 5% 1/4W
R87	1-249-393-11	CARBON	10 5% 1/4W	R158	1-249-405-11	CARBON	100 5% 1/4W
R88	1-249-429-11	CARBON	10K 5% 1/4W	R159	1-249-429-11	CARBON	10K 5% 1/4W
R89	1-249-429-11	CARBON	10K 5% 1/4W	R160	1-247-897-11	CARBON	560K 5% 1/4W
R90	1-249-417-11	CARBON	1K 5% 1/4W	R161	1-215-455-00	METAL	27K 1% 1/4W
R91	1-249-429-11	CARBON	10K 5% 1/4W	R162	1-215-445-00	METAL	10K 1% 1/4W
R92	1-249-435-11	CARBON	33K 5% 1/4W	R163	1-215-445-00	METAL	10K 1% 1/4W
R93	1-249-393-11	CARBON	10 5% 1/4W	R164	1-215-461-00	METAL	47K 1% 1/4W
R94	1-247-848-11	CARBON	5.1K 5% 1/4W	R165	1-215-461-00	METAL	47K 1% 1/4W
R95	1-249-417-11	CARBON	1K 5% 1/4W	R166	1-215-485-00	METAL	470K 1% 1/4W
R96	1-249-429-11	CARBON	10K 5% 1/4W	R167	1-249-429-11	CARBON	10K 5% 1/4W
R97	1-249-433-11	CARBON	22K 5% 1/4W	R168	1-249-429-11	CARBON	10K 5% 1/4W
R98	1-249-409-11	CARBON	220 5% 1/4W	R169	1-249-433-11	CARBON	22K 5% 1/4W
R99	1-249-405-11	CARBON	100 5% 1/4W	R170	1-249-405-11	CARBON	100 5% 1/4W
R100	1-249-417-11	CARBON	1K 5% 1/4W	R171	1-249-429-11	CARBON	10K 5% 1/4W
R101	1-249-405-11	CARBON	100 5% 1/4W	R172	1-215-445-00	METAL	10K 1% 1/4W
R102	1-249-430-11	CARBON	12K 5% 1/4W	R173	1-215-445-00	METAL	10K 1% 1/4W
R103	1-249-424-11	CARBON	3.9K 5% 1/4W	R174	1-215-457-00	METAL	33K 1% 1/4W
R104	1-247-800-11	CARBON	51 5% 1/4W	R175	1-215-457-00	METAL	33K 1% 1/4W
R105	1-249-417-11	CARBON	1K 5% 1/4W	R176	1-215-481-00	METAL	330K 1% 1/4W
R106	1-249-417-11	CARBON	1K 5% 1/4W	R177	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-424-11	CARBON	3.9K 5% 1/4W	R178	1-247-903-00	CARBON	1M 5% 1/4W
R109	1-249-437-11	CARBON	47K 5% 1/4W	R179	1-249-429-11	CARBON	10K 5% 1/4W
R110	1-249-430-11	CARBON	12K 5% 1/4W	R180	1-249-433-11	CARBON	22K 5% 1/4W
R111	1-249-437-11	CARBON	47K 5% 1/4W	R181	1-249-405-11	CARBON	100 5% 1/4W
R112	1-249-426-11	CARBON	5.6K 5% 1/4W	R182	1-215-451-00	METAL	18K 1% 1/4W
R113	1-249-430-11	CARBON	12K 5% 1/4W	R183	1-249-429-11	CARBON	10K 5% 1/4W
R114	1-249-437-11	CARBON	47K 5% 1/4W				



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REF. NO.	PART NO.	DESCRIPTION			
R184	1-215-477-00	METAL	220K	1%	1/4W
R185	1-215-445-00	METAL	10K	1%	1/4W
R186	1-215-445-00	METAL	10K	1%	1/4W
R189	1-215-445-00	METAL	220	1%	1/4W
R190	1-215-433-00	METAL	3.3K	1%	1/4W
R191	1-215-405-00	METAL	220	1%	1/4W
R192	1-215-433-00	METAL	3.3K	1%	1/4W
R193	1-249-433-11	CARBON	22K	5%	1/4W
R194	1-249-417-11	CARBON	1K	5%	1/4W
R195	1-249-417-11	CARBON	1K	5%	1/4W
R196	1-249-429-11	CARBON	10K	5%	1/4W
R197	1-249-429-11	CARBON	10K	5%	1/4W
R198	1-215-475-00	METAL	180K	1%	1/4W
R200	1-215-445-00	METAL	10K	1%	1/4W
R201	1-249-429-11	CARBON	10K	5%	1/4W
R202	1-249-429-11	CARBON	10K	5%	1/4W
R203	1-249-429-11	CARBON	10K	5%	1/4W
R204	1-249-429-11	CARBON	10K	5%	1/4W
R205	1-249-437-11	CARBON	47K	5%	1/4W
R206	1-249-417-11	CARBON	1K	5%	1/4W
R207	1-249-433-11	CARBON	22K	5%	1/4W
R208	1-249-437-11	CARBON	47K	5%	1/4W
R209	1-249-429-11	CARBON	10K	5%	1/4W
R210	1-249-429-11	CARBON	10K	5%	1/4W
R211	1-249-429-11	CARBON	10K	5%	1/4W
R220	1-249-439-11	CARBON	68K	5%	1/4W
R221	1-249-428-11	CARBON	8.2K	5%	1/4W
R223	1-249-433-11	CARBON	22K	5%	1/4W
R224	1-249-433-11	CARBON	22K	5%	1/4W
R290	1-215-443-00	METAL	8.2K	1%	1/4W
R302	1-215-440-00	METAL	6.2K	1%	1/4W
R302	1-215-445-00	METAL	10K	1%	1/4W
R303	1-249-419-11	CARBON	1.5K	5%	1/4W
<VARIABLE RESISTOR>					
RV1	1-237-521-21	RES, ADJ, CERMET	100K		
RV2	1-237-522-21	RES, ADJ, CERMET	200K		
RV3	1-237-521-21	RES, ADJ, CERMET	100K		
RV4	1-237-519-21	RES, ADJ, CERMET	20K		
RV5	1-237-519-21	RES, ADJ, CERMET	20K		
RV6	1-237-518-21	RES, ADJ, CERMET	10K		
RV7	1-237-518-21	RES, ADJ, CERMET	10K		
RV10	1-237-519-21	RES, ADJ, CERMET	20K		
RV11	1-237-519-21	RES, ADJ, CERMET	20K		
RV12	1-237-519-21	RES, ADJ, CERMET	20K		
RV13	1-237-519-21	RES, ADJ, CERMET	20K		
RV14	1-237-519-21	RES, ADJ, CERMET	20K		
RV15	1-237-519-21	RES, ADJ, CERMET	20K		
RV16	1-237-519-21	RES, ADJ, CERMET	20K		
RV17	1-237-517-21	RES, ADJ, CERMET	5K		
RV18	1-237-517-21	RES, ADJ, CERMET	5K		
RV19	1-237-519-21	RES, ADJ, CERMET	20K		
RV20	1-237-519-21	RES, ADJ, CERMET	20K		
RV21	1-237-519-21	RES, ADJ, CERMET	20K		
RV22	1-237-516-21	RES, ADJ, CERMET	2K		
RV23	1-237-516-21	RES, ADJ, CERMET	2K		
RV24	1-237-516-21	RES, ADJ, CERMET	2K		
RV25	1-237-519-21	RES, ADJ, CERMET	20K		
RV26	1-237-519-21	RES, ADJ, CERMET	20K		
RV27	1-237-519-21	RES, ADJ, CERMET	20K		
RV28	1-237-519-21	RES, ADJ, CERMET	20K		
RV29	1-237-519-21	RES, ADJ, CERMET	20K		
RV30	1-237-519-21	RES, ADJ, CERMET	20K		

REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK		
	RV31	1-237-519-21	RES, ADJ, CERMET 20K			
	RV32	1-237-516-21	RES, ADJ, CERMET 2K			
			<SWITCH>			
	S1	1-571-908-11	SWITCH, SLIDE			
			*****			
		*A-1346-029-A	EA BOARD, COMPLETE			
			*****			
		*4-347-706-00	HEAT SINK (TR)			
		*4-373-965-01	INSULATOR (SMALL)			
			<CAPACITOR>			
	C1	1-101-810-00	CERAMIC	100PF	5%	500V
	C2	1-124-917-11	ELECT	33MF	20%	25V
	C3	1-124-357-11	ELECT	33MF	20%	35V
	C4	1-124-046-00	ELECT	10MF		160V
	C5	1-124-046-00	ELECT	10MF		160V
	C6	1-101-361-00	CERAMIC	150PF	5%	50V
	C7	1-124-046-00	ELECT	10MF		160V
	C8	1-136-337-11	FILM	3.3MF	10%	100V
	C12	1-102-121-00	CERAMIC	0.0022MF	10%	50V
	C13	1-136-165-00	FILM	0.1MF	5%	50V
	C14	1-130-728-00	FILM	0.0022MF	5%	50V
	C15	1-102-973-00	CERAMIC	100PF	5%	50V
	C16	1-124-915-11	ELECT	10MF	20%	25V
	C17	1-126-233-11	ELECT	22MF	20%	16V
	C18	1-102-973-00	CERAMIC	100PF	5%	50V
	C19	1-124-910-11	ELECT	47MF	20%	25V
	C20	1-136-161-00	FILM	0.047MF	5%	50V
	C21	1-101-810-00	CERAMIC	100PF	5%	500V
	C22	1-108-700-11	MYLAR	0.047MF	10%	200V
	C23	1-123-024-21	ELECT	33MF		160V
	C24	1-124-046-00	ELECT	10MF		160V
	C25	1-136-541-11	FILM	1.5MF	5%	200V
	C26	1-136-161-00	FILM	0.047MF	5%	50V
	C27	1-108-700-11	MYLAR	0.047MF	10%	200V
	C28	1-124-666-11	ELECT	4.7MF	20%	200V
	C29	1-101-810-00	CERAMIC	100PF	5%	500V
	C30	1-162-135-11	CERAMIC	560PF	10%	2KV
	C31	1-136-069-00	FILM	0.0044MF	3%	2KV
	C32	1-136-069-00	FILM	0.0044MF	3%	2KV
	C33	1-124-512-11	ELECT	33MF	20%	50V
	C34	1-124-512-11	ELECT	33MF	20%	50V
	C35	1-126-163-11	ELECT	4.7MF	20%	50V
	C36	1-126-163-11	ELECT	4.7MF	20%	50V
	C37	1-161-051-00	CERAMIC	0.01MF	10%	50V
	C39	1-162-318-11	CERAMIC	0.001MF	10%	500V
	C40	1-124-915-11	ELECT	10MF	20%	16V
	C41	1-102-244-00	CERAMIC	220PF	10%	500V
	C42	1-102-973-00	CERAMIC	100PF	5%	50V
			<DIODE>			
	D1	8-719-110-31	DIODE RD12ESB2			
	D2	8-719-911-19	DIODE 1SS119			
	D3	8-719-911-19	DIODE 1SS119			
	D4	8-719-911-19	DIODE 1SS119			
	D7	8-719-110-03	DIODE RD7.5ESB2			
	D8	8-719-300-76	DIODE RH-1A			
	D9	8-719-928-08	DIODE ERD28-08S			

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D10	8-719-300-76	DIODE RH-1A		R29	1-249-429-11	CARBON 10K 5% 1/4W	
D11	8-719-300-76	DIODE RH-1A		R30	1-249-429-11	CARBON 10K 5% 1/4W	
D12	8-719-300-76	DIODE RH-1A		R31	1-247-868-11	CARBON 36K 5% 1/4W	
D13	8-719-109-75	DIODE RD4.3ESB2		R32	1-249-429-11	CARBON 10K 5% 1/4W	
D14	8-719-109-75	DIODE RD4.3ESB2		R33	1-249-427-11	CARBON 6.8K 5% 1/4W	
D15	8-719-911-19	DIODE ISS119		R34	1-215-433-00	METAL 3.3K 1% 1/4W	
D16	8-719-911-19	DIODE ISS119		R35	1-215-435-00	METAL 3.9K 1% 1/4W	
<CONNECTOR>				R36	1-249-429-11	CARBON 10K 5% 1/4W	
EA1	*1-568-536-11	PLUG (MINIATURE DY) 6P		R37	1-249-441-11	CARBON 100K 5% 1/4W	
<IC>				R38	1-249-429-11	CARBON 10K 5% 1/4W	
IC1	8-759-100-75	IC UPC1394C		R39	1-215-469-00	METAL 100K 1% 1/4W	
IC2	8-759-145-58	IC UPC4558C		R40	1-249-429-11	CARBON 10K 5% 1/4W	
<COIL>				R41	1-249-429-11	CARBON 10K 5% 1/4W	
L1	1-459-433-00	COIL (WITH CORE)		R42	1-215-876-00	METAL OXIDE 15K 5% 1W F	
L2	1-459-433-00	COIL (WITH CORE)		R43	1-215-859-00	METAL OXIDE 22 5% 1W F	
L3	1-459-433-00	COIL (WITH CORE)		R44	1-216-349-00	METAL OXIDE 1 5% 1W F	
L4	1-459-111-00	COIL, DRAM CORE (CDI)		R45	1-249-417-11	CARBON 1K 5% 1/4W	
L5	1-459-111-00	COIL, DRAM CORE (CDI)		R46	1-249-417-11	CARBON 1K 5% 1/4W	
<TRANSISTOR>				R47	1-216-463-00	METAL OXIDE 12K 5% 2W F	
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE		R48	1-216-346-00	METAL OXIDE 0.56 5% 1W F	
Q2	8-729-697-92	TRANSISTOR 2SA979-G		R49	1-249-382-11	CARBON 1.2 5% 1/4W F	
Q3	8-729-140-50	TRANSISTOR 2SC3209LK		R50	1-247-826-00	CARBON 620 5% 1/4W	
Q4	8-729-303-61	TRANSISTOR 2SC3851-G		R51	1-247-826-00	CARBON 620 5% 1/4W	
Q5	8-729-304-07	TRANSISTOR 2SA1488-Y		R52	1-215-445-00	METAL 10K 1% 1/4W	
Q10	8-729-119-80	TRANSISTOR 2SC2688-LK		R53	1-215-445-00	METAL 10K 1% 1/4W	
Q11	8-729-175-22	TRANSISTOR 2SC2752-L		R54	1-215-447-00	METAL 12K 1% 1/4W	
Q12	8-729-200-17	TRANSISTOR 2SA1091-0		R55	1-249-391-11	CARBON 6.8 5% 1/4W F	
Q13	8-729-119-80	TRANSISTOR 2SC2688-LK		R56	1-215-445-00	METAL 10K 1% 1/4W	
Q14	8-729-202-53	TRANSISTOR 2SD1556-LB		R57	1-215-445-00	METAL 10K 1% 1/4W	
Q15	8-729-313-42	TRANSISTOR 2SD1134-C		R58	1-249-405-11	CARBON 100 5% 1/4W	
Q16	8-729-385-82	TRANSISTOR 2SB858-C		R59	1-249-419-11	CARBON 1.5K 5% 1/4W	
<RESISTOR>				R60	1-249-419-11	CARBON 1.5K 5% 1/4W	
R1	1-249-418-11	CARBON 1.2K 5% 1/4W		R61	1-215-882-00	METAL OXIDE 22 5% 2W F	
R2	1-249-425-11	CARBON 4.7K 5% 1/4W		R62	1-215-882-00	METAL OXIDE 22 5% 2W F	
R3	1-249-429-11	CARBON 10K 5% 1/4W		R63	1-216-361-00	METAL OXIDE 0.22 5% 2W F	
R4	1-249-429-11	CARBON 10K 5% 1/4W		<TRANSFORMER>			
R5	1-249-429-11	CARBON 10K 5% 1/4W		T1	1-460-067-11	HLT	
R6	1-249-429-11	CARBON 10K 5% 1/4W		T2	1-407-850-00	DLT	
R7	1-249-421-11	CARBON 2.2K 5% 1/4W		T3	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
R8	1-249-438-11	CARBON 56K 5% 1/4W		T4	1-437-079-00	TRANSFORMER, HORIZONTAL DRIVE	
R9	1-249-429-11	CARBON 10K 5% 1/4W		T5	1-439-383-11	HOT	
R10	1-249-418-11	CARBON 1.2K 5% 1/4W		*****			
R11	1-249-448-11	CARBON 1.2 5% 1/4W F		*1-627-678-11 W BOARD			
R12	1-249-448-11	CARBON 1.2 5% 1/4W F		*****			
R13	1-249-417-11	CARBON 1K 5% 1/4W F		<CAPACITOR>			
R14	1-215-887-00	METAL OXIDE 150 5% 2W F		C1	1-108-692-11	MYLAR 0.01MF 10% 200V	
R15	1-249-429-11	CARBON 10K 5% 1/4W		C2	1-108-692-11	MYLAR 0.01MF 10% 200V	
R22	1-249-417-11	CARBON 1K 5% 1/4W		<RESISTOR>			
R23	1-215-445-00	METAL 10K 1% 1/4W		R1	1-214-702-00	METAL 75 1% 1/4W	
R24	1-215-445-00	METAL 10K 1% 1/4W		R2	1-214-702-00	METAL 75 1% 1/4W	
R25	1-215-431-00	METAL 2.7K 1% 1/4W		R3	1-214-702-00	METAL 75 1% 1/4W	
R26	1-215-431-00	METAL 2.7K 1% 1/4W					
R27	1-249-435-11	CARBON 33K 5% 1/4W					
R28	1-215-461-00	METAL 47K 1% 1/4W					

HW

HH

HX

HY

REF.NO. PART NO.

DESCRIPTION

REMARK

REF.NO. PART NO.

DESCRIPTION

REMARK

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\*1-647-257-11 HW BOARD

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&lt;HOLDER&gt;

D1 \*4-026-910-00 HOLDER, LED  
D2 \*4-026-910-00 HOLDER, LED

&lt;DIODE&gt;

D101 8-719-938-68 DIODE GL3HY8  
D102 8-719-812-41 DIODE TLR124

&lt;RESISTOR&gt;

R101 1-216-065-00 METAL GLAZE 4.7K 5% 1/10W

&lt;SWITCH&gt;

S101 1-570-566-11 SWITCH, PUSH (4 KEY)  
S102 1-570-566-11 SWITCH, PUSH (4 KEY)  
S103 1-570-566-11 SWITCH, PUSH (4 KEY)  
S104 1-570-566-11 SWITCH, PUSH (4 KEY)

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\*1-627-682-11 HH BOARD

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\*1-566-614-11 PLUG (L TYPE) 3P

&lt;VARIABLE RESISTOR&gt;

RV1 1-238-332-11 RES, VAR, CARBON 20K  
RV2 1-238-332-11 RES, VAR, CARBON 20K  
RV3 1-238-332-11 RES, VAR, CARBON 20K  
RV4 1-238-332-11 RES, VAR, CARBON 20K

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\*1-647-258-11 HX BOARD

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&lt;SWITCH&gt;

S1 1-692-470-11 SWITCH, PUSH (4 KEY)

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A-1371-895-A HY BOARD, COMPLETE

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&lt;CAPACITOR&gt;

C1 1-124-584-00 ELECT 100MF 20% 10V  
C2 1-124-584-00 ELECT 100MF 20% 10V  
C3 1-124-584-00 ELECT 100MF 20% 10V  
C4 1-163-031-11 CERAMIC CHIP 0.01MF 50V  
C5 1-163-031-11 CERAMIC CHIP 0.01MF 50V  
C6 1-163-031-11 CERAMIC CHIP 0.01MF 50V

&lt;DIODE&gt;

D1 8-719-404-46 DIODE MA110  
D2 8-719-404-46 DIODE MA110  
D3 8-719-404-46 DIODE MA110  
D4 8-719-404-46 DIODE MA110  
D5 8-719-404-46 DIODE MA110

D6 8-719-404-46 DIODE MA110  
D7 8-719-404-46 DIODE MA110  
D8 8-719-404-46 DIODE MA110  
D9 8-719-404-46 DIODE MA110  
D10 8-719-404-46 DIODE MA110

D11 8-719-404-46 DIODE MA110  
D12 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D12  
D13 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D13

D14 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D14  
D15 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D15  
D16 8-719-938-68 DIODE GL3HY8

\*4-374-937-01 HOLDER, LED; D16  
D17 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D17  
D18 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D18

D19 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D19  
D20 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D20  
D21 8-719-938-68 DIODE GL3HY8

\*4-374-937-01 HOLDER, LED; D21  
D22 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D22  
D23 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D23

D24 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D24  
D25 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D25  
D26 8-719-404-46 DIODE MA110

D27 8-719-404-46 DIODE MA110  
D28 8-719-404-46 DIODE MA110  
D29 8-719-404-46 DIODE MA110  
D30 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D30

D31 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D31  
D32 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D32  
D33 8-719-938-68 DIODE GL3HY8

\*4-374-937-01 HOLDER, LED; D33  
D34 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D34  
D35 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D35

D36 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D36  
D37 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D37  
D38 8-719-938-68 DIODE GL3HY8

\*4-374-937-01 HOLDER, LED; D38  
D39 8-719-404-46 DIODE MA110  
D40 8-719-404-46 DIODE MA110  
D41 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D41

D42 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D42  
D43 8-719-938-68 DIODE GL3HY8  
\*4-374-937-01 HOLDER, LED; D43  
D44 8-719-938-68 DIODE GL3HY8

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION			REMARK
D45	*4-374-937-01	HOLDER, LED; D44		JR15	1-216-295-00	METAL GLAZE	0	5%	1/10W
D46	8-719-404-46	DIODE MA110		JR16	1-216-295-00	METAL GLAZE	0	5%	1/10W
D47	8-719-404-46	DIODE MA110		JR17	1-216-295-00	METAL GLAZE	0	5%	1/10W
D48	8-719-404-46	DIODE MA110		JR18	1-216-295-00	METAL GLAZE	0	5%	1/10W
D49	8-719-404-46	DIODE MA110				<TRANSISTOR>			
D50	8-719-938-68	DIODE GL3HY8							
D51	*4-374-937-01	HOLDER, LED; D50		Q1	8-729-175-72	TRANSISTOR 2SC2757-T33			
	8-719-938-68	DIODE GL3HY8				<RESISTOR>			
	*4-374-937-01	HOLDER, LED; D51							
D52	8-719-404-46	DIODE MA110							
D53	8-719-404-46	DIODE MA110		R1	1-216-043-00	METAL GLAZE	560	5%	1/10W
D54	8-719-404-46	DIODE MA110		R2	1-216-043-00	METAL GLAZE	560	5%	1/10W
D55	8-719-404-46	DIODE MA110		R3	1-216-043-00	METAL GLAZE	560	5%	1/10W
D56	8-719-404-46	DIODE MA110		R4	1-216-043-00	METAL GLAZE	560	5%	1/10W
				R5	1-216-043-00	METAL GLAZE	560	5%	1/10W
D57	8-719-404-46	DIODE MA110							
D58	8-719-404-46	DIODE MA110		R6	1-216-043-00	METAL GLAZE	560	5%	1/10W
D59	8-719-404-46	DIODE MA110		R7	1-216-043-00	METAL GLAZE	560	5%	1/10W
D60	8-719-404-46	DIODE MA110		R8	1-216-043-00	METAL GLAZE	560	5%	1/10W
D61	8-719-404-46	DIODE MA110		R9	1-216-043-00	METAL GLAZE	560	5%	1/10W
				R10	1-216-043-00	METAL GLAZE	560	5%	1/10W
D62	8-719-404-46	DIODE MA110							
D63	8-719-938-68	DIODE GL3HY8		R11	1-216-043-00	METAL GLAZE	560	5%	1/10W
D64	*4-374-937-01	HOLDER, LED; D63		R12	1-216-043-00	METAL GLAZE	560	5%	1/10W
	8-719-938-68	DIODE GL3HY8		R13	1-216-043-00	METAL GLAZE	560	5%	1/10W
	*4-374-937-01	HOLDER, LED; D64		R14	1-216-043-00	METAL GLAZE	560	5%	1/10W
D65	8-719-938-68	DIODE GL3HY8		R15	1-216-043-00	METAL GLAZE	560	5%	1/10W
	*4-374-937-01	HOLDER, LED; D65							
D66	8-719-938-68	DIODE GL3HY8		R16	1-216-043-00	METAL GLAZE	560	5%	1/10W
	*4-374-937-01	HOLDER, LED; D66		R17	1-216-043-00	METAL GLAZE	560	5%	1/10W
D67	8-719-938-68	DIODE GL3HY8		R18	1-216-043-00	METAL GLAZE	560	5%	1/10W
				R19	1-216-045-00	METAL GLAZE	680	5%	1/10W
	*4-374-937-01	HOLDER, LED; D67		R20	1-216-033-00	METAL GLAZE	220	5%	1/10W
D68	8-719-938-68	DIODE GL3HY8							
	*4-374-937-01	HOLDER, LED; D68		R21	1-216-043-00	METAL GLAZE	560	5%	1/10W
D69	8-719-938-68	DIODE GL3HY8		R22	1-216-033-00	METAL GLAZE	220	5%	1/10W
	*4-374-937-01	HOLDER, LED; D69		R23	1-216-049-00	METAL GLAZE	1K	5%	1/10W
				R24	1-216-043-00	METAL GLAZE	560	5%	1/10W
				R25	1-216-043-00	METAL GLAZE	560	5%	1/10W
		<CONNECTOR>							
HY1	*1-566-045-11	PIN, CONNECTOR 6P		R26	1-216-043-00	METAL GLAZE	560	5%	1/10W
HY2	*1-566-047-11	PIN, CONNECTOR 8P		R27	1-216-049-00	METAL GLAZE	1K	5%	1/10W
HY3	*1-566-052-11	PIN, CONNECTOR 13P		R28	1-216-049-00	METAL GLAZE	1K	5%	1/10W
HY4	*1-566-047-11	PIN, CONNECTOR 8P		R29	1-216-049-00	METAL GLAZE	1K	5%	1/10W
				R30	1-216-043-00	METAL GLAZE	560	5%	1/10W
		<IC>		R31	1-216-043-00	METAL GLAZE	560	5%	1/10W
IC1	8-757-991-00	IC CX-7991		R32	1-216-043-00	METAL GLAZE	560	5%	1/10W
IC2	8-757-991-00	IC CX-7991		R33	1-216-043-00	METAL GLAZE	560	5%	1/10W
IC3	8-757-991-00	IC CX-7991		R34	1-216-043-00	METAL GLAZE	560	5%	1/10W
				R35	1-216-043-00	METAL GLAZE	560	5%	1/10W
		<RESISTOR>		R36	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR1	1-216-295-00	METAL GLAZE	0 5% 1/10W	R37	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR2	1-216-295-00	METAL GLAZE	0 5% 1/10W	R38	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR3	1-216-295-00	METAL GLAZE	0 5% 1/10W	R39	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR4	1-216-295-00	METAL GLAZE	0 5% 1/10W	R40	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR5	1-216-295-00	METAL GLAZE	0 5% 1/10W						
				R41	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR6	1-216-295-00	METAL GLAZE	0 5% 1/10W	R42	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR7	1-216-295-00	METAL GLAZE	0 5% 1/10W	R43	1-216-043-00	METAL GLAZE	560	5%	1/10W
JR8	1-216-295-00	METAL GLAZE	0 5% 1/10W						
JR9	1-216-295-00	METAL GLAZE	0 5% 1/10W			<SWITCH>			
JR10	1-216-295-00	METAL GLAZE	0 5% 1/10W	S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			
				S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			
JR11	1-216-295-00	METAL GLAZE	0 5% 1/10W	S3	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			
JR12	1-216-295-00	METAL GLAZE	0 5% 1/10W	S4	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			
JR13	1-216-295-00	METAL GLAZE	0 5% 1/10W	S5	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			
JR14	1-216-295-00	METAL GLAZE	0 5% 1/10W						
				S6	1-572-482-11	SWITCH, KEY BOARD (1 KEY)			

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7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
S7	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C63	1-126-769-21	ELECT CHIP 100MF	20% 14V
S8	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C64	1-126-769-21	ELECT CHIP 100MF	20% 14V
S9	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C65	1-126-769-21	ELECT CHIP 100MF	20% 14V
S10	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C66	1-126-769-21	ELECT CHIP 100MF	20% 14V
S11	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C67	1-126-769-21	ELECT CHIP 100MF	20% 14V
S12	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C68	1-126-769-21	ELECT CHIP 100MF	20% 14V
S13	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C81	1-126-769-21	ELECT CHIP 100MF	20% 14V
S14	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C91	1-126-769-21	ELECT CHIP 100MF	20% 14V
S15	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C92	1-126-769-21	ELECT CHIP 100MF	20% 14V
S16	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C101	1-126-769-21	ELECT CHIP 100MF	20% 14V
S17	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C102	1-126-769-21	ELECT CHIP 100MF	20% 14V
S18	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C111	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S19	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C112	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S20	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C121	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S21	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C122	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S22	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C123	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S23	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C124	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S24	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C125	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S25	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C126	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S26	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C127	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S27	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C128	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S28	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C141	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S29	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C142	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S30	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C143	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S31	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C144	1-163-031-11	CERAMIC CHIP 0.01MF	50V
S32	1-572-482-11	SWITCH, KEY BOARD (1 KEY)		C145	1-163-031-11	CERAMIC CHIP 0.01MF	50V
*****				C146	1-163-031-11	CERAMIC CHIP 0.01MF	50V
A-1371-896-A HZ BOARD, COMPLETE				C147	1-163-031-11	CERAMIC CHIP 0.01MF	50V
*****				C148	1-163-031-11	CERAMIC CHIP 0.01MF	50V
<CAPACITOR>				C149	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C1	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C161	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C2	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C162	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C3	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C163	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C4	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C164	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C5	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C165	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C6	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C166	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C7	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C167	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C8	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C168	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C9	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C169	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C10	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C170	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C11	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C171	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C12	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C172	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C13	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V	C173	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C14	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C174	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C15	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C175	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C16	1-163-031-11	CERAMIC CHIP 0.01MF	50V	C176	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C17	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C177	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C18	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	C178	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C19	1-124-779-00	ELECT CHIP 10MF	20% 16V	C179	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C21	1-126-103-11	ELECT 470MF	20% 16V	C181	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C22	1-126-103-11	ELECT 470MF	20% 16V	C182	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C23	1-126-204-11	ELECT CHIP 47MF	20% 16V	C183	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C24	1-126-204-11	ELECT CHIP 47MF	20% 16V	C191	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C41	1-126-103-11	ELECT 470MF	20% 16V	C192	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C42	1-126-103-11	ELECT 470MF	20% 16V	<DIODE>			
C43	1-126-204-11	ELECT CHIP 47MF	20% 16V	D1	8-719-109-88	DIODE RD5.6ESB1	
C44	1-126-204-11	ELECT CHIP 47MF	20% 16V	D2	8-719-109-88	DIODE RD5.6ESB1	
C45	1-126-204-11	ELECT CHIP 47MF	20% 16V	D3	8-719-109-88	DIODE RD5.6ESB1	
C61	1-126-103-11	ELECT 470MF	20% 16V	D4	8-719-109-88	DIODE RD5.6ESB1	
C62	1-126-769-21	ELECT CHIP 100MF	20% 14V	D5	8-719-109-88	DIODE RD5.6ESB1	
				D6	8-719-109-88	DIODE RD5.6ESB1	
				D7	8-719-109-88	DIODE RD5.6ESB1	

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R19	1-249-422-11	CARBON	2.7K 5% 1/4W	R84	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R20	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R85	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R21	1-249-417-11	CARBON	1K 5% 1/4W	R86	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R22	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R87	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R23	1-249-422-11	CARBON	2.7K 5% 1/4W	R88	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R24	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R89	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R25	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R90	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R26	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R91	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R27	1-249-422-11	CARBON	2.7K 5% 1/4W	R92	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R28	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R93	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R29	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R94	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R30	1-249-422-11	CARBON	2.7K 5% 1/4W	R95	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R31	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R97	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R32	1-216-079-00	METAL GLAZE	18K 5% 1/10W	R100	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R33	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R101	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R34	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R102	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R35	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R103	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R36	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R104	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R37	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R105	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R38	1-249-417-11	CARBON	1K 5% 1/4W	R106	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R39	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R107	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R40	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R181	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R41	1-249-417-11	CARBON	1K 5% 1/4W	R191	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R42	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R208	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R43	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R209	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R44	1-249-417-11	CARBON	1K 5% 1/4W	<SWITCH>			
R45	1-216-073-00	METAL GLAZE	10K 5% 1/10W	S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R46	1-216-049-00	METAL GLAZE	1K 5% 1/10W	S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R47	1-216-081-00	METAL GLAZE	22K 5% 1/10W	<CRYSTAL>			
R48	1-249-417-11	CARBON	1K 5% 1/4W	X1	1-577-121-11	VIBRATOR, CRYSTAL	
R49	1-216-073-00	METAL GLAZE	10K 5% 1/10W	*****			
R50	1-249-417-11	CARBON	1K 5% 1/4W	*1-617-890-11	HA BOARD		
R51	1-249-417-11	CARBON	1K 5% 1/4W		*****		
R52	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<CONNECTOR>			
R53	1-249-417-11	CARBON	1K 5% 1/4W	HA1	*1-566-055-11	PIN, CONNECTOR 3P	
R54	1-216-073-00	METAL GLAZE	10K 5% 1/10W	HA2	*1-566-056-11	PIN, CONNECTOR 4P	
R55	1-216-097-00	METAL GLAZE	100K 5% 1/10W	HA3	*1-566-064-11	PIN, CONNECTOR 12P	
R56	1-216-073-00	METAL GLAZE	10K 5% 1/10W	HA4	*1-566-054-11	PIN, CONNECTOR 2P	
R57	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<RESISTOR>			
R58	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R1	1-247-814-11	CARBON	200 5% 1/4W
R59	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R2	1-215-469-00	METAL	100K 1% 1/4W
R60	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<VARIABLE RESISTOR>			
R61	1-216-073-00	METAL GLAZE	10K 5% 1/10W	RV1	1-237-519-21	RES, ADJ, CERMET 20K	
R62	1-216-073-00	METAL GLAZE	10K 5% 1/10W	<SWITCH>			
R63	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	S1	1-570-565-11	SWITCH, PUSH (10 KEY)	
R64	1-216-073-00	METAL GLAZE	10K 5% 1/10W	S2	1-570-565-11	SWITCH, PUSH (10 KEY)	
R65	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	S3	1-570-565-11	SWITCH, PUSH (10 KEY)	
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W	S4	1-570-565-11	SWITCH, PUSH (10 KEY)	
R67	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	S5	1-570-565-11	SWITCH, PUSH (10 KEY)	
R68	1-216-073-00	METAL GLAZE	10K 5% 1/10W	S6	1-570-565-11	SWITCH, PUSH (10 KEY)	
R69	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R70	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R71	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R73	1-216-097-00	METAL GLAZE	100K 5% 1/10W				
R74	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R75	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R76	1-216-097-00	METAL GLAZE	100K 5% 1/10W				
R77	1-216-074-00	METAL GLAZE	11K 5% 1/10W				
R78	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R79	1-216-080-00	METAL GLAZE	20K 5% 1/10W				
R80	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R81	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R82	1-216-097-00	METAL GLAZE	100K 5% 1/10W				
R83	1-216-073-00	METAL GLAZE	10K 5% 1/10W				


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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
S7	1-570-565-11	SWITCH, PUSH (10 KEY)		*****			
S8	1-570-565-11	SWITCH, PUSH (10 KEY)		*1-647-911-11	TA BOARD		
S9	1-570-565-11	SWITCH, PUSH (10 KEY)			*****		
S10	1-570-565-11	SWITCH, PUSH (10 KEY)		<CONNECTOR>			
*****				TA1	*1-566-054-11	PIN, CONNECTOR 2P	
*1-617-893-11	Y BOARD			TA2	*1-566-055-11	PIN, CONNECTOR 3P	
	*****			TA3	*1-566-056-11	PIN, CONNECTOR 4P	
<DIODE>				TA4	*1-566-057-11	PIN, CONNECTOR 5P	
D1	8-719-812-43	DIODE TLG124A		TA5	*1-566-058-11	PIN, CONNECTOR 6P	
*****				TA6	*1-566-055-11	PIN, CONNECTOR 3P	
*A-1390-344-A	TB BOARD, COMPLETE			TA7	*1-566-058-11	PIN, CONNECTOR 6P	
	*****			TA8	*1-566-042-11	PIN, CONNECTOR 3P	
<CONNECTOR>				TA9	*1-566-045-11	PIN, CONNECTOR 6P	
CN1	*1-564-431-11	POST, CONNECTOR 3P		TA10	*1-566-045-11	PIN, CONNECTOR 6P	
CN2	*1-564-431-11	POST, CONNECTOR 3P		TA11	*1-566-045-11	PIN, CONNECTOR 6P	
CN11	*1-561-724-00	SOCKET, CONNECTOR 2P		TA12	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CN12	*1-561-724-00	SOCKET, CONNECTOR 2P		TA13	*1-561-337-00	CONNECTOR, MULTI	
<RESISTOR>				TA14	*1-561-337-00	CONNECTOR, MULTI	
R100	1-249-422-11	CARBON	2.7K 5% 1/4W	TA15	*1-561-337-00	CONNECTOR, MULTI	
<CONNECTOR>				*****			
TB4	*1-566-054-11	PIN, CONNECTOR 2P		*A-1394-088-A	Z BOARD, COMPLETE		
TB5	*1-566-054-11	PIN, CONNECTOR 2P			*****		
TB6	*1-566-060-11	PIN, CONNECTOR 8P		*1-561-337-21	CONNECTOR, MULTI		
TB7	*1-566-054-11	PIN, CONNECTOR 2P		*****			
TB8	*1-566-058-11	PIN, CONNECTOR 6P		*A-1394-128-A	PA BOARD, COMPLETE		
TB9	*1-566-060-11	PIN, CONNECTOR 8P			*****		
TB10	*1-566-064-11	PIN, CONNECTOR 12P		<CAPACITOR>			
TB11	*1-566-055-11	PIN, CONNECTOR 3P		C101	1-124-046-00	ELECT	10MF 20% 160V
TB12	*1-566-064-11	PIN, CONNECTOR 12P		C102	1-124-910-11	ELECT	47MF 20% 25V
TB13	*1-566-062-11	PIN, CONNECTOR 10P		C103	1-123-024-21	ELECT	33MF 20% 160V
TB14	*1-566-064-11	PIN, CONNECTOR 12P		C104	1-136-171-00	FILM	0.33MF 5% 50V
TB15	*1-566-060-11	PIN, CONNECTOR 8P		C105	1-108-700-11	MYLAR	0.047MF 10% 200V
TB16	*1-566-057-11	PIN, CONNECTOR 5P		C106	1-108-700-11	MYLAR	0.047MF 10% 200V
TB17	*1-566-057-11	PIN, CONNECTOR 5P		C107	1-102-030-00	CERAMIC	330PF 10% 500V
TB18	*1-566-055-11	PIN, CONNECTOR 3P		C108	1-136-072-00	FILM	0.0063MF 3% 2KV
TB19	*1-566-056-11	PIN, CONNECTOR 4P		C109	1-161-753-00	CERAMIC	470PF 10% 3KV
TB20	*1-566-056-11	PIN, CONNECTOR 4P		C110	1-162-114-00	CERAMIC	0.0047MF 2KV
TB21	*1-566-056-11	PIN, CONNECTOR 4P		C111	1-136-601-11	FILM	0.01MF 10% 630V
TB22	*1-566-054-11	PIN, CONNECTOR 2P		C112	1-136-557-11	FILM	0.0033MF 5% 630V
TB23	*1-566-054-11	PIN, CONNECTOR 2P		C113	1-136-173-00	FILM	0.47MF 5% 50V
TB24	*1-566-054-11	PIN, CONNECTOR 2P		C116	1-126-233-11	ELECT	22MF 20% 16V
TB28	*1-566-062-11	PIN, CONNECTOR 10P		C117	1-124-910-11	ELECT	47MF 20% 16V
TB29	*1-566-060-11	PIN, CONNECTOR 8P		C118	1-102-973-00	CERAMIC	100PF 5% 50V
TB31	*1-561-337-00	CONNECTOR, MULTI		C119	1-108-796-11	MYLAR	0.0022MF 5% 50V
TB32	*1-561-337-00	CONNECTOR, MULTI		C120	1-124-915-11	ELECT	10MF 20% 16V
TB33	*1-561-337-00	CONNECTOR, MULTI		C121	1-102-074-00	CERAMIC	0.001MF 10% 50V
TB34	*1-561-337-00	CONNECTOR, MULTI		C122	1-136-165-00	FILM	0.1MF 5% 50V
TB35	*1-561-337-00	CONNECTOR, MULTI		C123	1-136-169-00	FILM	0.22MF 5% 50V
TB36	*1-561-337-00	CONNECTOR, MULTI		C124	1-136-111-00	FILM	1MF 5% 200V
TB37	*1-561-337-00	CONNECTOR, MULTI		C125	1-136-169-00	FILM	0.22MF 5% 50V
TB38	*1-561-337-00	CONNECTOR, MULTI		C126	1-102-030-00	CERAMIC	330PF 10% 500V
TB39	*1-561-337-00	CONNECTOR, MULTI		C127	1-130-736-11	FILM	0.01MF 5% 50V
TB40	*1-561-337-00	CONNECTOR, MULTI		C128	1-130-994-11	FILM	0.033MF 5% 50V
				C129	1-123-369-00	ELECT	4.7MF 20% 25V
				C130	1-102-074-00	CERAMIC	0.001MF 10% 50V
				C131	1-136-153-00	FILM	0.01MF 5% 50V
				C132	1-101-004-00	CERAMIC	0.01MF 50V









PA

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The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C201	1-108-634-11	MYLAR 0.047MF	10% 100V	Q104	8-729-804-48	TRANSISTOR 2SC3675	
C202	1-124-915-11	ELECT 10MF	20% 16V	Q105	8-729-804-48	TRANSISTOR 2SC3675	
C203	1-101-006-00	CERAMIC 0.047MF	50V	Q106	8-729-804-48	TRANSISTOR 2SC3675	
C204	1-124-122-11	ELECT 100MF	20% 25V	Q107	8-729-119-80	TRANSISTOR 2SC2688-LK	
C205	1-126-541-11	ELECT 330MF	20% 16V	Q108	8-729-119-80	TRANSISTOR 2SC2688-LK	
C207	1-124-122-11	ELECT 100MF	20% 25V	Q109	8-729-119-76	TRANSISTOR 2SA1175-HFE	
C209	1-101-006-00	CERAMIC 0.047MF	50V	Q110	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C212	1-101-006-00	CERAMIC 0.047MF	50V	Q111	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C213	1-124-915-11	ELECT 10MF	20% 50V	Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C214	1-124-915-11	ELECT 10MF	20% 50V	Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C215	1-124-915-11	ELECT 10MF	20% 16V	Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C216	1-136-153-00	FILM 0.01MF	5% 50V	<RESISTOR>			
C217	1-124-915-11	ELECT 10MF	20% 16V	R101	1-216-347-11	METAL OXIDE 0.68 5% 1W	F
C218	1-126-541-11	ELECT 330MF	20% 16V	R102	1-247-887-00	CARBON 220K 5% 1/4W	
C219	1-101-004-00	CERAMIC 0.01MF	50V	R103	1-249-419-11	CARBON 1.5K 5% 1/4W	
C220	1-130-994-11	FILM 0.033MF	5% 50V	R104	1-216-464-11	METAL OXIDE 18K 5% 2W	F
C221	1-136-171-00	FILM 0.033MF	5% 50V	R105	1-216-359-00	METAL OXIDE 6.8 5% 1W	F
<DIODE>				R106	1-216-350-11	METAL OXIDE 1.2 5% 1W	F
D102	8-719-300-80	DIODE RU-1C		R107	1-216-372-11	METAL OXIDE 1.8 5% 2W	F
D103	8-719-300-80	DIODE RU-1C		R108	1-212-998-00	FUSIBLE 470 5% 1/2W	F
D104	8-719-300-80	DIODE RU-1C		R109	1-215-898-11	METAL OXIDE 10K 5% 2W	F
D105	8-719-300-80	DIODE RU-1C		R110	1-202-719-00	SOLID 1M 10% 1/2W	
D106	8-719-901-19	DIODE V11N		R111	1-202-723-00	SOLID 2.2M 10% 1/2W	
D107	8-719-109-93	DIODE RD6.2ESB2		R112	1-214-937-00	CARBON 1M 5% 1/2W	
D109	8-719-911-19	DIODE ISS119		R113	1-249-417-11	CARBON 1K 5% 1/4W	
D110	8-719-911-19	DIODE ISS119		R114	1-249-429-11	CARBON 10K 5% 1/4W	
D111	8-719-109-63	DIODE RD3.0ESB2		R115	1-202-719-00	SOLID 1M 10% 1/2W	
D201	8-719-911-19	DIODE ISS119		R116	1-249-423-11	CARBON 3.3K 5% 1/4W	
D202	8-719-109-72	DIODE RD3.9ESB2		R117	1-249-429-11	CARBON 10K 5% 1/4W	
D203	8-719-911-19	DIODE ISS119		R118	1-249-429-11	CARBON 10K 5% 1/4W	
D204	8-719-000-28	THYRISTOR CRO2AM-8		R119	1-214-937-00	CARBON 1M 5% 1/2W	
D205	8-719-000-28	THYRISTOR CRO2AM-8		R120	1-215-451-00	METAL 18K 1% 1/4W	
D206	8-719-911-19	DIODE ISS119		R121	1-249-435-11	CARBON 33K 5% 1/4W	
D207	8-719-911-19	DIODE ISS119		R122	1-249-435-11	CARBON 33K 5% 1/4W	
D215 	8-759-107-91	IC UPC574J-TP		R123	1-215-459-00	METAL 39K 1% 1/4W	
D216 	8-759-107-91	IC UPC574J-TP		 R124 	METAL	1/6W	
D217	8-719-911-19	DIODE ISS119		R125	1-215-455-00	METAL 27K 1% 1/4W	
D218	8-719-911-19	DIODE ISS119		 R126 	METAL	1/6W	
D219	8-719-911-19	DIODE ISS119		R127	1-249-434-11	CARBON 27K 5% 1/4W	
D220	8-719-911-19	DIODE ISS119		R128	1-249-427-11	CARBON 6.8K 5% 1/4W	
<IC>				R129	1-249-440-11	CARBON 82K 5% 1/4W	
IC1	8-759-100-75	IC UPC1394C		R130	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC2	8-759-729-03	IC NJM2903D		R131	1-249-429-11	CARBON 10K 5% 1/4W	
IC3	8-759-729-03	IC NJM2903D		R132	1-249-428-11	CARBON 8.2K 5% 1/4W	
IC4	8-759-990-82	IC TL082CP		R133	1-249-417-11	CARBON 1K 5% 1/4W	
<COIL>				R134	1-249-437-11	CARBON 47K 5% 1/4W	
L1	1-459-215-00	COIL (WITH CORE)		R135	1-249-441-11	CARBON 100K 5% 1/4W	
<CONNECTOR>				R136	1-249-423-11	CARBON 3.3K 5% 1/4W	
PA1	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P		R137	1-215-461-00	METAL 47K 1% 1/4W	
PA2	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P		R138	1-215-440-00	METAL 6.2K 1% 1/4W	
<TRANSISTOR>				R139	1-249-424-11	CARBON 3.9K 5% 1/4W	
Q101	8-729-802-71	TRANSISTOR 2SA1407-D		R140	1-249-417-11	CARBON 1K 5% 1/4W	
Q102	8-729-201-62	TRANSISTOR 2SC2555-2		R141	1-249-429-11	CARBON 10K 5% 1/4W	
Q103	8-729-202-53	TRANSISTOR 2SD1556-LB		R142	1-249-419-11	CARBON 1.5K 5% 1/4W	
				R143	1-215-439-00	METAL 5.6K 1% 1/4W	
				R144	1-215-439-00	METAL 5.6K 1% 1/4W	
				R146	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R148	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R150	1-249-417-11	CARBON 1K 5% 1/4W	
				R151	1-249-423-11	CARBON 3.3K 5% 1/4W	
				R153	1-249-441-11	CARBON 100K 5% 1/4W	
				R154	1-249-433-11	CARBON 22K 5% 1/4W	

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

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PA

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R201	1-215-899-11	METAL OXIDE	15K 5% 2W F			(BVM-1911 ONLY)	
R202	1-215-899-11	METAL OXIDE	15K 5% 2W F	1-941-995-05	CONNECTOR ASSY, MICRO 13P		
R203	1-215-899-11	METAL OXIDE	15K 5% 2W F			(BVM-2011P ONLY)	
R204	1-215-899-11	METAL OXIDE	15K 5% 2W F	S901 $\Delta$	1-570-052-12	SWITCH, PUSH (AC POWER) (1 KEY)	
R205	1-249-429-11	CARBON	10K 5% 1/4W	V901 $\Delta$	.8-733-053-05	CRT SD-112 (M49JJP20X)	(BVM-1911 ONLY)
				V901 $\Delta$	.8-733-054-05	CRT SD-112 (M49JJP21X)	(BVM-2011P ONLY)
R206	1-249-421-11	CARBON	2.2K 5% 1/4W	*****			
R207	1-249-393-11	CARBON	10 5% 1/4W	ACCESSORIES & PACKING MATERIALS			
R208	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R209	1-249-441-11	CARBON	100K 5% 1/4W	PART NO.	DESCRIPTION	REMARK	
R210	1-249-429-11	CARBON	10K 5% 1/4W				
R211	1-249-429-11	CARBON	10K 5% 1/4W	*A-1394-088-A	Z BOARD, COMPLETE		
R212	1-249-433-11	CARBON	22K 5% 1/4W		(INCLUDING 1-561-337-21)		
R213	1-249-415-11	CARBON	680 5% 1/4W	1-561-337-21	CONNECTOR MULTI		
R214	1-249-429-11	CARBON	10K 5% 1/4W	$\Delta$ 1-551-812-11	CORD POWER (7.0/125V)	(BVM-1911 ONLY)	
R220	1-215-455-00	METAL	27K 1% 1/4W	$\Delta$ 1-590-151-11	CORD SET, POWER (10A/250V)	(BVM-2011P ONLY)	
R221	1-215-437-00	METAL	4.7K 1% 1/4W	2-990-242-01	HOLDER (B), PLUG		
$\Delta$ R222	$\Delta$	METAL	1/6W	4-039-985-01	MANUAL, O&M		
R223	1-215-486-00	METAL	510K 1% 1/4W	4-378-901-01	KEY		
R224	1-215-471-00	METAL	120K 1% 1/4W	4-386-841-01	LABEL, TALLY NUMBER		
R225	1-215-458-00	METAL	36K 1% 1/4W	4-386-841-11	LABEL, TALLY NUMBER		
R226	1-215-449-00	METAL	15K 1% 1/4W	*4-039-999-01	INDIVIDUAL CARTON	(BVM-2011P ONLY)	
$\Delta$ R227	$\Delta$	METAL	1/6W	*4-040-000-01	INDIVIDUAL CARTON	(BVM-1911 ONLY)	
$\Delta$ R228	$\Delta$	METAL	1/6W	*4-361-988-02	BAG, PROTECTION		
R231	1-249-415-11	CARBON	680 5% 1/4W	*4-386-858-01	CUSHION (UPPER)		
R232	1-249-429-11	CARBON	10K 5% 1/4W	*4-386-875-01	CUSHION (FRONT LOWER)		
R237	1-215-455-00	METAL	27K 1% 1/4W	*4-386-876-01	CUSHION (REAR LOWER)		
R238	1-215-437-00	METAL	4.7K 1% 1/4W				
$\Delta$ R239	$\Delta$	METAL	1/6W				
R240	1-215-486-00	METAL	510K 1% 1/4W				
R241	1-215-471-00	METAL	120K 1% 1/4W				
R242	1-249-422-11	CARBON	2.7K 5% 1/4W				
R243	1-249-422-11	CARBON	2.7K 5% 1/4W				
R245	1-247-887-00	CARBON	220K 5% 1/4W				
R246	1-249-422-11	CARBON	2.7K 5% 1/4W				
R247	1-249-422-11	CARBON	2.7K 5% 1/4W				
R248	1-249-399-11	CARBON	33 5% 1/4W				
R249	1-249-399-11	CARBON	33 5% 1/4W				
R250	1-249-411-11	CARBON	330 5% 1/4W				
<VARIABLE RESISTOR>							
RV1	1-237-500-21	RES, ADJ, CERMET 1K					
<TRANSFORMER>							
T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE					
T2	1-437-079-00	TRANSFORMER, HORIZONTAL DRIVE					
T3	1-439-384-11	LOT					
*****							
MISCELLANEOUS							
*****							
$\Delta$ 1-237-165-12	RESISTOR ASSY, HIGH-VOLTAGE						
$\Delta$ 1-426-328-11	COIL, DEGAUSSING						
$\Delta$ 1-439-382-21	TRANSFORMER ASSY, FLYBACK						
$\Delta$ 1-451-287-21	DEFLECTION YOKE (Y14FAA)						
1-452-032-00	MAGNET, DISK;10MM $\phi$						
$\Delta$ 1-452-117-31	CRT NECK ASSY						
$\Delta$ 1-452-261-22	CRT NECK ASSY (362)						
$\Delta$ 1-453-103-32	HIGH-VOLTAGE BLOCK (HB-203(B))						
$\Delta$ 1-532-746-11	FUSE, GLASS TUBE (4A/125V)						
1-565-791-11	CONNECTOR, BNC 1P						
1-941-422-15	CONNECTOR ASSY (ROUND TYPE)12P						